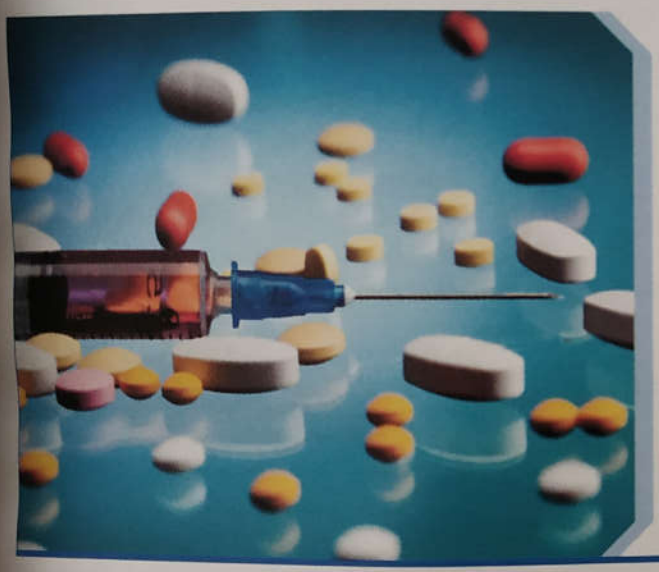

PHARMACOLOGY

General Pharmacology — Questions

1. **Which of the following drug undergo high first pass metabolism so given at high dose orally is**

   A. Isoprenaline B. Lignocaine
   C. Testosterone D. Verapamil

2. **Inhibition of Pgp-mediated efflux in the BBB will lead to**

   A. decrease in the concentration of loperamide in the CNS
   B. Increase in the concentration of loperamide in the CNS
   C. Both are false
   D. Both are true

3. **Following drug is an inhibitor and inducer of P Glycoprotein**

   A. Ritonavir B. Digoxin
   C. RifampicinD. Morphine

4. **Following are true about oral route of drug administration EXCEPT**

   A. Unpalatable drugs can't be given
   B. Absorption of drugs may be variable and erratic
   C. Not useful in emergencies
   D. Drugs with high first pass metabolism can be given

5. **Hepatic extraction ratio is given by**

   A. Hepatic blood flow multiplied by Vd
   B. Hepatic clearance divided by hepatic blood flow
   C. Hepatic blood flow multiplied by hepatic clearance
   D. Hepatic blood flow multiplied by bioavailability

6. **After starting continuous IV infusion of a drug X, 75% of the drug steady-state concentration is reached after**

   A. 1 half-life of drug X
   B. 2 half-life of drug X
   C. 4 half-life of drug X
   D. 3 half-life of drug X

7. **Following are examples of competitive enzyme inhibition except**

   A. Acetazolamide: Carbonic anhydrase
   B. Carbidopa: Dopa decarboxylase
   C. Moclobemide: MAO-A
   D. Captopril: Angiotensin converting enzyme (ACE)

8. **Parallel rightward shift of agonist DRC is seen in**

   A. Noncompetitive antagonism
   B. Competitive agonism
   C. Competitive antagonism
   D. Noncompetitive agonism

9. **EC50 is**

   A. Drug dose that produces 50% of maximal effect
   B. Drug concentration that produces 50% of toxic effect
   C. Drug concentration that produces 50% of lethal effect
   D. Drug concentration that produces 50% of maximal effect

10. **Upto 500 participants are involved in which phase of clinical trail**

    A. Phase I
    B. Phase IV
    C. Phase III
    D. Phase II

11. **About partial agonistic property of Buprenorphine, which of the following is true**

    A. Less respiratory depression even when given at high dose
    B. Decreased affinity to mu receptor
    C. Can be given in opioid dependent patients
    D. None of the above

1. d	2. b	3. a	4. d	5. b	6. b	7. a	8. c	9. d	10. d
11. a									

12. Elevation of glucose by corticosteroids is counteracted by insulin is an example

A. Physiological antagonism
B. CHEMICAL antagonism
C. Competitive antagonism
D. Noncompetitive antagonism

13. Binding of B-arrestin to the Gs receptor leads to

A. Increases response to agonist
B. Increased response to antagonist
C. Reduced response to agonist
D. Reduced response to agonist

14. Gentamicin volume of distribution is increased in following condition

A. Edema
B. Ascites
C. Pleural effusion
D. All of the above

15. Which of the following phase II conjugation Enzymes are located at mitochondria

A. Glucuronidation
B. Glycine conjugation
C. Glutathione conjugation
D. Acetylation

16. Which of the following CYP inducers are less known or unknown till now

A. CYP 1A2 B. CYP 2D9
C. CYP 3A4 D. CYP 2C9

17. Charcoal-broiled foods and smoking induces following enzyme

A. CYP 3A4 B. CYP 2D9
C. CYP 2C9 D. CYP 1A2

18. Desulfuration is an example for

A. Phase 1 hydrolysis
B. Phase 1 oxidation
C. Phase 1 reduction
D. Phase 1 decyclization

19. Following are Cytochrome P450-Independent oxidations except

A. Flavin monooxygenase
B. Deamination
C. Amine oxidases
D. Dehydrogenations

20. Grapefruit juice is an

A. Enzyme inducer
B. Enzyme modulator
C. None
D. Enzyme inhibitor

21. Flucloxacillin-induced liver injury is associated with

A. HLA-B *58:01
B. DRB5 *01:01
C. HLA-DRB1 *15:01
D. HLA-B *57:01

22. Following are "rights" of safe medication except

A. Right drug B. Right doctor
C. Right patient D. Right route

23. Margin of safety is given by

A. LD50/ ED50 B. LD25/ ED75
C. LD5/ ED95 D. LD1/ ED99

24. Half-life is directly proportional to

A. Clearance
B. Plasma concentrations
C. Rate of elimination
D. All of the above

25. When we give gentamicin, its half life is 2-3 h but it accumulates in kidney and its half life is prolonged for 53 hour. This half life is called as

A. Secondary half life
B Zero order half life
C. First order half life
D. Terminal half life

26. At fetal plasma, drugs showing ion trapping are

A. Weakly acidic drugs
B. Both
C. Weakly basic drugs
D. None of the above

27. Apparent volume of distribution is

A. Total amount of drug in body divided by Drug clearance
B. Total amount of drug in body divided by Drug half life
C. Total amount of drug in body divided by elimination rate constant
D. Total amount of drug in body divided by Drug Plasma Concentration

12. a	13. d	14. d	15. b	16. b	17. d	18. b	19. b	20. d	21. d
22. b	23. d	24. b	25. d	26. c	27. d				

28. The following are true about apparent volume of distribution except

A. Drugs with high molecular weight has less aVd
B. aVd of >20L/kg means the drug has a large aVd
C. Drugs with High aVd are difficult to remove by hemodialysis
D. Drugs with aVd and high protein bound are known to cause less toxicity during displacement reactions

29. Which of the following is incorrect statement

A. In celiac disease absorption of cephalexin is increased
B. In celiac disease absorption of cotrimoxazole is increased
C. Achlorhydria decreases aspirin absorption by favoring its ionization
D. In celiac disease absorption of amoxicillin is increased

30. Which of the following drugs should be given in sustained release oral damage form

A. An antihypertensive with a plasma half-life of 3 hours
B. An anti-arrhythmic drug with a plasma half-life of 10 seconds used for acute treatment of PSVT
C. An anti-inflammatory drug with a plasma half-life of 24 hour
D. A hypnotic drug with a plasma half-life of 2 hours

31. Which of the following statements best describes an 'orphan drug'

A. It is a drug which acts on orphanin receptors
B. It is a very cheap drug
C. It is a drug required for treatment or prevention of a rare disease
D. It is a drug which has no therapeutic use

32. Which of the following is true of 'placebo'

A. Placebo is the inert material added to the drug for making tablets
B. Placebo do not produce any effect
C. All patients respond to placebo
D. Placebo is a dummy medication

33. Therapeutic drug monitoring of plasma concentrations of antihypertensive drugs are not practiced because

A. Determination of plasma level of these drugs is quite tedious and long process
B. Antihypertensive effect does not increase linearly with the dose
C. All antihypertensive drugs are prodrugs
D. It is easier to measure the effect of these drugs

34. A 56-year-old man, Surender with heart failure is to be treated with a diuretic drug. Drugs A and B have same mechanism of action. Drug A in dose of 50 mg produces the same magnitude of diuresis as 500 mg of drug B. This suggests that

A. Drug B is less efficacious than drug A
B. Drug A is safer drug than drug B
C. Drug A will have shorter duration of action than drug
D. Drug A is more potent than drug B

35. Which of the following does not act as second messenger

A. G protein
B. Cyclic AMP
C. Inositol trisphosphate
D. Diacylglycerol

36. Which of the following drugs act through heptahelical (serpentine) receptors

A. Insulin
B. Salbutamol
C. Estrogen
D. Local anesthetics

37. Fastest acting receptor/transduction mechanism is

A. Intrinsic ion channel operation
B. Adenylyl cyclase- cyclic AMP pathway
C. Phospholipase C-IP3: DAG pathway
D. Nuclear receptor

28. d	29. d	30. a	31. c	32. d	33. d	34. d	35. a	36. b	37. a

38. **Dose response curves of salbutamol for bronchodilation and tachycardia are widely separated in the dose axis. This information suggests that salbutamol is**

A. Highly selective drug
B. Highly potent cardiac stimulant
C. Highly efficacious bronchodilator
D. Highly toxic drug

39. **Which of the following is most likely due to a pharmacogenetics condition**

A. Primaquine induced hemolytic anemia
B. Hypoglycemia by insulin
C. Tachycardia by albuterol
D. Metoclopramide induced muscle dystonia

40. **Which of the following most accurately describes the transmembrane signaling process involved in the steroid hormone action**

A. Action on a membrane spanning tyrosine kinase
B. Diffusion across the membrane and binding to an intracellular receptor
C. Action of a G protein, which activates or inhibits adenylyl cyclase
D. Opening of transmembrane ion channels

41. **Which of the following terms best describes the antagonism of leukotrienes' Broncho constrictor effect (mediated at the leukotriene receptors) by terbutaline (acting at the adrenoceptor) in a patient with asthma**

A. Pharmacologic antagonist
B. Physiologic antagonist
C. Partial agonist
D. Chemical antagonist

42. **This drug has to be administered to a 65 years old patient Uttam Singh, with a GFR of 60 ml/min. (assuming normal GFR is 120 ml/min). Liver and biliary functions are normal in this patient. What should be the dose rate of drug X in this patient**

A. 50 mg/hour
B. 25 mg/hour
C. 100 mg/hour
D. 30 mg/hour

43. **A volunteer Ram will receive a new drug in phase I clinical trial. The clearance and the volume of distribution of the drug in Ram are 1.386 L/hr. and 80 L respectively. The half-life of the drug in him would be approximately**

A. 40 hr.
B. 80 hr.
C. 77 hr.
D. 0.02 hr.

44. **A patient requires an infusion of procainamide. It half-life is 2 hrs. The infusion is begun at 9 AM at 1 PM on the same day, the blood concentration is found to be 3 mg/L. What is the probably steady state concentration after 2 days of infusion**

A. 3 mg/L
6 mg/L
B. 15 mg/L
4 mg/L

45. **A young male Kallu is brought to the hospital with severe asthma. The pharmacokinetics of theophylline include the following parameters: V4= 35 L; CL= 48 ml/min; half-life is 8 hrs. If an intravenous infusion of theophylline is started at the rate of 0.48 mg/min, how will it take to reach 93.75% of the final steady state**

A. Approximately 32 hrs
B. Approximately 48 min
C. Approximately 5.8 hrs
D. Approximately 8 hrs

46. **An old man enters the hospital with myocardial infraction and a severe ventricular arrhythmia. The antiarrhythmic drug chosen has a narrow therapeutic window. The minimum toxic plasma concentration is 1. 5 times the minimum therapeutic plasma concentration. The half-life is 6 hrs. It is essential to maintain the plasma concentration above the minimum therapeutic level to prevent a possible lethal arrhythmia. Of the following, the most appropriate dosing regimen would be**

A. Constant intravenous infusion
B. Once a day
C. Twice a day
D. Four times a day

38. a	39. a	40. b	41. b	42. d	43. a	44. d	45. a	46. a

47. A 30-year-old patient o11 digoxin therapy has developed d digitalis toxicity. The plasma digoxin level is 4 n 9lml. Renal function is normal and the plasma t1/2 for digoxin in this patient is 1. 6 days. How long should you withhold digoxin in order to reach a safer yet probably therapeutic level of 1 ng/ml

A. 1.6 Days
B. 3.2 Days
C. 2.4 Days
D. 4.8 Days

48. A drug following first order kinetics is being administered by constant i.v. infusion at a rate of 10 mg/min. Its steady state plasma concentration is 2 mg/min. If the dose rate is increased to 20 mg/dl, what will be the new steady state plasma concentration?

A. 6 mg/ dl
B. 3 mg/ dl
C. 1 mg/ dl
D. 4 mg/ dl

49. Rate of elimination of a new drug is 20 mg/hr at a steady state plasma concentration of 10 mg/L, then its renal clearance will be

A. 0.5 L/hr
B. 5.0 L/hr
C. 20 L/hr
D. 2.0 L/hr

50. Maintenance dose rate of a drug depends primarily on

A. Total body clearance
B. Volume of distribution
C. Half life
D. Lipid soluble

51. Amount of a drug X administered to a patient is 4.0 g and its plasma concentration is found to be 50 ug/ml, what will be the volume of distribution of drug X?

A. 100 L
B. 60 L
C. 50 L
D. 80 L

52. A patient, Rajesh with a history of wheezing, coughing and shortness of breath is being evaluated in the asthma clinic. Several drug treatments with different routes are under consideration. Which of the following statements about routes of administration is most correct?

A. Administration of a bronchodilator drug by inhaled aerosol is usually associated with more adverse effects than administration of this drug by mouth.
B. Bioavailability of most drugs is greater with rectal administration than with sublingual administration
C. Administration of a drug by transdermal patch is often faster but is associated with more first pass metabolism than oral administration
D. The first pass effect is the result of elimination of a drug after administration and before it enters systemic circulation.

53. A three-year-old child is brought to the emergency department having just ingested a large overdose of an antihistaminic drug. This drug is a weak base capable of entering most tissues including the brain. On physical examination the heart rate is 1007 minute, blood pressure is 110/60 mm Hg and the respiratory rate is 20/minute. In this case of poisoning

A. Urinary excretion would be accelerated by administration of NaHCO3 an alkalinizing agent
B. More of the drug would be ionized at blood pH than at stomach pH
C. Absorption of the drug would be faster from the stomach than from the small intestine.
D. Urinary excretion would be accelerated by administration of NH4 C1, an acidifying agent

54. A factor that is likely to increase the duration of action of a drug D that is partially metabolized by CYP3A4 in the liver is:

A. Chronic administration of phenobarbital with the drug
B. Displacement from tissues binding sites by another drug
C. Chronic administration of rifampicin
D. Chronic administration of cimetidine with the drug

47. b	48. d	49. d	50. a	51. d	52. d	53. d	54. d

55. Which of the following factors has maximum effect on filtration of a drug by the glomerulus

A. Lipid solubility
B. Degree of ionization
C. Rate of tubular secretion
D. Plasma protein binding

56. All of the following reactions are catalyzed by microsomal enzymes EXCEPT:

A. Glucuronidation Oxidation
B. Reduction Acetylation

57. Which of the following statements about a drug having high plasma protein binding is true?

A. High plasma protein binding decreases the volume of distribution
B. Volume of distribution of the drug is very high
C. This drug will be filtered quickly by glomerulus
D. This drug is likely to have minimum chances of drug interactions

58. All of the following are advantages of transdermal drug delivery systems EXCEPT:

A. They produce smooth and no fluctuating plasma concentration of the drug
B. They minimize interindividual variations in the achieved plasma drug concentration
C. They produce high peak plasma concentration of the drug
D. They avoid hepatic first pass metabolism of the drug

59. A new drug is found to be highly lipid soluble, it is metabolized at a slower rate of 10% per hour. On intravenous injection it produces general anesthesia that lasts only for 15 min. This short duration of anesthesia is due to:

A. Metabolism of the drug in liver
B. Redistribution
C. High plasma protein binding of the drug
D. Excretion of drug by kidney

60. Metabolism of a drug primarily results in

A. Conversion of lipid soluble drugs to water soluble metabolites
B. Activation of the active drug
C. Conversion of prodrug to active metabolite
D. Conversion of water soluble drug to lipid soluble metabolites

61. A drug X is secreted through renal tubules, tubular secretion of this drug can be confirmed if renal clearance of drug X is

A. Equal to the GFR
B. Less than the GFR
C. More than the GFR
D. More than volume of distribution

62. All of the following factors tend to increase the volume of distribution of a drug EXCEPT

A. Low ionization at physiological pH values
B. High lipid solubility
C. High tissue binding
D. High plasma protein binding

63. Which of the following drugs has maximum chances of absorption from gastric mucosa?

A. Morphine sulfate
B. Hyoscine hydrobromide
C. Quinine dihydrochloride
D. Diclofenac sodium

64. Urinary alkalinizing agents are administered in case of poisoning due to drugs which are

A. Weak acids
B. Strong bases
C. Strong acids
D. Weak bases

65. Titration of the dose of a drug with the response can be done with which of the following routes of administration?

A. Inhalational
B. Sublingual
C. Transdermal
D. Subcutaneous

55. d	56. d	57. a	58. c	59. b	60. a	61. c	62. d	63. d	64. a
65. a									

66. The most general term for the process by which the amount of active drug in the body is reduced after absorption into the systemic circulation is

A. Excretion
B. First pass metabolism
C. Distribution
D. Elimination

67. The process by which the amount of a drug in the body decreases after administration but before entering the systemic circulation is called

A. Excretion
B. First order elimination
C. Metabolism
D. First pass effect

68. Regarding termination of drug action

A. Hepatic metabolism and renal excretion are the two most important mechanisms Drugstore
B. Drugs must be excreted from the body to terminate their action
C. Metabolism of drugs always abolishes their pharmacologic activity
D. Distribution of a drug out of blood stream terminates the drug's effects

69. Drug which works by psychodynamic rather than Pharmacodynamic means is

A. Orphan Drug
B. Nocebo
C. Psychotropic Drug
D. Placebo

70. All of the following are predicted from the pharmacological profile of a drug except

A. Secondary Effect
B. Adverse drug event
C. Toxic Effect
D. Side Effect

71. All of the following are predicted from the pharmacological profile of a drug except

A. Secondary Effect
B. Toxic Effect
C. Side Effect
D. Adverse drug event

72. Which of the following acts through membrane Soluble guanylyl cyclase

A. Insulin
B. NO
C. Herceptin
D. Nesiritide

73. A drug Z has affinity and intrinsic activity of 0.8, then it is a

A. Agonist
B. Inverse Agonist
C. Competitive Antagonist
D. Partial Agonist

74. Which of the following studies in clinical trial is done mainly for pharmacokinetic profile of drug using < 100 microgram of drug

A. Human therapeutic exploratory study
B. Human safety pharmacology study
C. Human therapeutic confirmatory study
D. Human micro dosing study

75. Choose the incorrect statement regarding drug absorption

A. First class metabolism reduces bioavailability
B. Heparin not absorbed due to its large size
C. Drugs which dissolve in water are rapidly absorbed from GIT
D. Highly ionized molecule are absorbed from stomach

76. Evaluation of safety and tolerability in humans using maximum tolerated dose (MTD) as end point is done in

A. Phase II
B. Phase III
C. Phase IV
D. Phase I

77. Rebound hypertension after clonidine withdrawal is following type of ADR

A. Type A
B. Type E
C. Type B
D. Type D

78. Essentials Medicines are those that

A. Are essential for lifestyle modification
B. Treat only epidemic diseases
C. Are newer in the market
D. Satisfy the priority health care needs

66. d	67. d	68. a	69. d	70. b	71. d	72. b	73. d	74. d	75. d
76. d	77. b	78. d							

79. Conversion of Diazepam to Oxazepam is an example of

A. Active drug to inactive metabolite
B. Inactive drug to active metabolite
C. Active drug to active metabolite
D. Active drug toxic metabolite

80. Which of the following drug undergo high first pass metabolism so given at high dose orally is

A. Isoprenaline
B. Lignocaine
C. Testosterone
D. Verapamil

79. c

80. d

1. **D. Verapamil**

Option A, B and C - Isoprenaline, Lignocaine and Testosterone respectively undergo high first pass metabolism so not given orally. Drug undergoing high first pass metabolism so given at high dose orally is Verapamil. [Ref: KDT, Topic first pass metabolism]

2. **B. Increase in the concentration of loperamide in the CNS**

Loperamide:

- Substrate of Pgp
- Pgp prevents accumulation of loperamide in the CNS
- Inhibition of Pgp-mediated efflux in the BBB would cause an increase in the concentration of loperamide in the CNS and potentiate adverse effects.

Clinical Implication:

- Coadministration of Loperamide and the potent Pgp inhibitor quinidine results in significant respiratory depression [Ref: GG]

3. **A. Ritonavir**

Ritonavir is an inhibitor and inducer of P Glycoprotein

Digoxin = Is a substrate of P Glycoprotein

Rifampicin = is an inducer of P Glycoprotein and also induces CYP enzymes

[Ref: Richard B. Kim (2002) Drugs as P-glycoprotein substrates, inhibitors and inducers, Drug Metabolism Reviews, 34:1-2, 47-54.]

4. **D. Drugs with high first pass metabolism can be given**

Note: Ref: KDT

Oral route of drug administration

- Slower onset not useful in emergencies
- Unpalatable drugs can't be given
- Cannot be used for uncooperative/ unconscious/vomiting patient
- Drugs destroyed by digestive juices like penicillin G, insulin
- Drugs with high first pass metabolism can't give like testosterone, Lidocaine

5. **B. Hepatic clearance divided by hepatic blood flow**

Ref: KAT

Hepatic extraction ratio is given by hepatic clearance divided by hepatic blood flow.

6. **B. 2 half-life of drug X**

Note: Ref: KAT

- Fifty percent of the steady-state concentration is reached after one half life
- 75% of the steady-state concentration is reached after two half life
- Over 90% of the steady-state concentration is reached after four half lives

7. **A. Acetazolamide: Carbonic anhydrase**

Note: Ref: KDT

Competitive enzyme inhibition

- Carbidopa: Dopa decarboxylase
- Moclobemide: MAO-A
- Captopril: Angiotensin converting enzyme (ACE)

Noncompetitive enzyme inhibition

- **Acetazolamide: Carbonic anhydrase**

8. **C. Competitive antagonism**

Note: Ref: KAT

- Parallel rightward shift of agonist DRC is seen in competitive (reversible) antagonism
- Flattening of agonist DRC is seen in noncompetitive antagonism
- Irreversible **competitive antagonism** agonist DRC is shifted to the right and the maximal response is lowered.

9. **D. Drug concentration that produces 50% of maximal effect**

Note: Ref: KAT

- EC50 is the Drug concentration that produces 50% of maximal effect
- ED 50 Drug dose that produces 50% of maximal effect. Lower the ED50, higher the potency

10. D. Phase II

Note: Ref: GG

50-500 participants are involved in Phase II of clinical trail

10-100 participants are involved in Phase I of clinical trail

A few hundred to a few thousand participants are involved in Phase III of clinical trail

11. A. Less respiratory depression even when given at high dose

Note: Ref: KAT

About partial agonistic property of Buprenorphine:

- Affinity to mu receptor is normal
- Less respiratory depression even when given at high dose, because it is a partial agonist
- Cannot be given in opioid dependent patients, because partial agonist acts as antagonist in presence of agonist at precipitates withdrawal

12. A. Physiological antagonism

Note: Ref: KAT

Physiological antagonism:

- It is an antagonism between endogenous regulatory pathways mediated by different receptors
- Glucocortisteriods and insulin act on quite distinct receptor effector systems ad regulate glucose
- Histamine and Adrenaline act at different receptor and cause bronchoconstriction and bronchodilation respectively

13. D. Reduced response to agonist

Note: Ref: KAT

In receptor desensitization

- Binding of B-arrestin to the receptor further diminishes the receptor's ability to interact with G s and leads to reduced cellular response for binding of agonist
- Example beta 2 agonist induced bronchodilation

14. D. All of the above

Note: Ref: KAT

Gentamicin:

- Hydrophilic
- Has small volumes of distribution
- But in Abnormal accumulation of fluid in edema, ascites, pleural effusion can markedly increase the volume of distribution of it

15. B. Glycine conjugation

Note: Ref: KAT

- Glycine conjuction: Acyl-CoA glucine-tranferase (mitochondria)
- Glucuronidation: UDP glucuronosyl-transferase (microsomes)
- Acetylation: N-Acetyltransferase (cytosol)
- Glutathione conjuction: GSH-S-transferase (cytosol, microsomes)

16. B. CYP 2D9

Note: Ref: KAT

for CYP 2D6, inducers are less known or unknown till now

17. D. CYP 1A2

Note: Ref: KAT

Charcoal-broiled foods, cruciferous vegetables, grilled meat and smoking induces CYP 1A2

Clinical implication:

Theophylline metabolized by CYP 1A2 smoking induces CYP 1A2 and reduce levels of theophylline

18. B. Phase 1 oxidation

Note: Ref: KAT

Desulfuration is an example for phase 1 oxidation Thiopentone undergoes Desulfuration

19. B. Deamination

Note: Ref: KAT

Cytochrome P450-independet oxidations except:

- Flavin monooxygenase
- Amine oxidases
- Dehydrogenations

Deamination IS a cytochrome P450 dependent oxidation

20. D. Enzyme inhibitor

Note: Ref: Kat

Grapefruit juice is an Enzyme Inhibitor

- Increases levels of Alprazolam, Atorvastatin, Cisapride, Cyclosporine
- Midazolam, Triazolam

Remember: St. John's worst is an Enzyme inducer

21. D. HLA-B *57:01

Note: Ref: KAT

- HLA-B *57:01 Flucloxacillin-induced liver injury
- HLA-B *57:01 Abacavir-induced skin toxicity
- HLA-B *58:01 Allopurinol-induced skin toxicity
- HLA-DRB1 *15:01 Amoxicillin-clavulanate-induced liver injury
- HLA-B *15:02 Carbamazepine-induced skin toxicity

22. B. Right doctor

Note: Ref: GG

Following are "five rights" of safe medication administration can help practitioners avoid medication errors

- Right drug
- Right patient
- Right dose
- Right route
- Right time

23. D. LD1/ ED99

Note: Ref: GG

The ED99 for the therapeutic effect can be compared to LD1 for lethality (toxic effect), to yield a margin of safety.

Therapeutic Index = LD50/ ED50

24. B. Plasma concentrations

Note: Ref: GG

- If you know the formula, very easy to answer
- T ½ = 0.693 Vd /CL
- Cl= rate of elimination / PLASMA concentrations
- So from the above formula inference is
- Half Life
- Is directly proportional to plasma concentrations and Vd
- Half life
- Is indirectly proportional to elimination rate and clearance

25. D. Terminal half life

Note: Ref: GG

Terminal half life:

- With prolonged dosing (or with high drug concentrations), a drug may penetrate beyond the central compartment into "deep" or secondary body compartments that equilibrate only slowly with the plasma
- When the infusion or dosing stops, the drug will be initially cleared from plasma as expected but will eventually drop to a point at which net diffusion from the secondary compartments begins, and this slow equilibration will produce a prolongation of the half-life of the drug, referred to as the terminal half-life.

26. C. Weakly basic drugs

Note: Ref: GG

At fetal plasma is slightly more acidic than that of the mother (pH 7.0-7.2 vs 7.4)

So that ion trapping of weakly basic drugs occurs.

27. D. Total amount of drug in body divided by Drug Plasma Concentration

Note: Ref: KDT

- Apparent volume of distribution is total amount of drug in body divided by Drug Plasma Concentration

28. D. Drugs with aVd and high protein bound are known to cause less toxicity during displacement reactions

Note: Ref: KDT

- Drugs with high molecular weight has less aVd

- EXAMPLE herapin
- Drugs with low aVd and high protein bound are known to cause more toxicity during displacement reactions
- Salicylates displacing Tolbutamide from protein binding leading to hypoglycaemia
- aVd of >20L/kg means the drug has a large aVd
- a greater the value, greater the aVd
- Drugs with High aVd are difficult to remove by hemodialysis
- These are present in tissue stores, so not available for removal by dialysis
- Ex: Digoxin

29. D. In celiac disease absorption of amoxicillin is increased

Note: Ref: KDT

- In celiac disease absorption of amoxicillin is decreased
- In celiac disease absorption of cephalexin and cotrimoxazole is increased
- Achlorhydria decreases aspirin absorption by favoring its ionization

30. A. An antihypertensive with a plasma half-life of 3 hours

- Sustained release formulations of a drug are used for the drugs having short duration of action requiring prolonged administration.
- PSVT is m acute condition and requires a short and fast acting drug. Adenosine is therefore, the drug of choice for this condition.
- Option (b) describes a drug having long half-life (24 hours). This drug need not be administered as sustained release preparation,
- For a hypnotic drug & action required is brief I. e. To induce sleep. Therefore, it should not be given as a sustained release preparation.
- Treatment of hypertension is lifelong. Drug with hall life of 3 hours, needs to be administered several times a day, therefore sustained release oral dosage form is best utilized for this drug.

31. C. It is a drug required for treatment or prevention of a rare disease

Orphan drugs are used for rare diseases e. g. Erythropoietin for the treatment of anemia in patients with chronic renal failure

Ref KDT

32. D. Placebo is a dummy medication

Placebo plays a very important role m the clinical trials. To know, whether the effect is produced by a drug or it is just by chance, a dummy medication known as placebo is given to the control group, placebo may or may not produce an effect in a subject.

Ref KDT

33. D. It is easier to measure the effect of these drugs

TDM is done for drugs (with narrow therapeutic index) whose response cannot be monitored by clinical examination Antihypertensive effect can be easily measured, therefore TDH · 1 is not required

Ref KDT

34. D. Drug A is more potent than drug B

The drug producing the same response at lower dose is more potent. In this question, Drug A is 10 times more potent than drug B. This data does not indicate anything about efficacy, safety or duration of action.

Ref Katzung

35. A. G protein

Cyclic AMP, IP3, and DAG are second messengers whereas G Proteins are the first messengers. IP3 and DAG increase the release of Ca2+ that acts as a third messenger.

Ref KDT

36. B. Salbutamol

GPCRs are heptahelical or serpentine receptors. Salbutamol acts through 02 receptors which arc GPCRs.

Ref KDT

37. A. Intrinsic ion channel operation

Drugs acting via ionotropic receptors are fastest acting whereas those acting though nuclear receptors at a slowest in action

Ref Katzung; KDT

38. A. Highly selective drug

Wide separation of two curves on DRC suggests that the dose required to produce one action is much higher than the other.

It is seen that bronchodilation (13, action) appears at low doses whereas tachycardia (P, action) is present only at high doses. Thus, it shows that the drug is highly selective for P/receptors.

Ref Katzung

39. A. Primaquine induced hemolytic anemia

Primaquine is an oxidant drug. It can cause hemolytic anemia in subjects having deficiency of G-6-PD enzyme. This condition is genetically determined.

Ref KDT

40. B. Diffusion across the membrane and binding to an intracellular receptor

Steroid hormones are lipid soluble and act on cytoplasmic receptors after crossing the plasma membrane.

Ref KDT

41. B. Physiologic antagonist

Drugs producing opposite action by acting on different receptors are called physiological antagonists.

Ref Katzung

42. D. 30 mg/hour

- In this question 80 percent of drug is eliminated by renal route and 20 percent by non-renal routes (10 percent by hepatic metabolism and 10 percent by biliary secretion).
- This patient has 50 percent renal fiction (60 m1/min of GFR instead of 120 ml/min). Thus, the drug that can be eliminated in this person is 20 percent (Non-renal route) + 40 percent (Rena] route 50 percent of 80 percent)
- =60 percent
- Thus, the dose rate should be 60 percent of the original. i.e. 50 mg/hr. x 60 percent = 30 mg/hr.

Ref Goodman and Gilman 12e/ p 36, 37

43. A. 40 hr

$T1/2 = 0.693 * v_d/CL$

Ref Katzung

44. D. 4 mg/L

Half-life of this drug is 2 hours and its plasma concentration is 3 mg/L after 4 hours (9 AM to 1 PM)

This means, after 2 half-lives (4 hour.) plasma concentrations is 3 mg /L. We know, by constant i.v. infusion, plasma concentration attained is 75% of the steady state in 2 half-lives, so if 3 mg/L is 75% of steady state it will be amount to 4 mg/L

Ref Katzung

45. A. Approximately 32 hrs

For a drug following first order kinetics, rise in plasma concentration as well as fall in plasma concentration is similar. when the steady state Is attained and the drug administration is stopped, it will be eliminated from the body. 50% will be eliminated from the body. 50% will be eliminated in one half-life, 75% in $2t_{1/2}$ 87.5% (50 + 25 + 12. 5%) in 3t1/2 and 93 75% (50 + 25 + 12. 51 6. 25%) in four hail lives.

When constant i.v. infusion is administered, plasma concentration increases in the same manner. In one half-life, it is 50% of the steady state and to reach 93.75% of steady state, 4 half-lives will be required.

As half-life of this drug is 8 hours, approximately 32 hours (4 × 8) will be taken.

46. A. Constant intravenous infusion

- When a drug is administered less frequently, it produces marked variation in the plasma concentrations. In this question the drug has a half-Life of 6 hours. If we repeat the dose at 6

hourly intervals, there will be 100% variation in the plasma concentration.

- More frequent dosing will minimize the variation between maximum and minimum plasma concentrations. As the margin of safety of this drug will (give in the question) is very low (maximum tolerable concentration is 1.5 times the effective concentration), constant i.v. infusion is the best route

Ref Katzung

47. B. 3.2 Days

We want to decrease the plasma concentration of digoxin from 4 ng/ml to 1 ng/ml. It will take two half-lives. Thus time required will be $2 \times t_{1/2}$ i. e. $2 \times 1.6 = 3.2$ days.

48. D. 4 mg/ dl

Dose Rate = Clearance * Steady state plasma concentration

This means plasma concentration at steady state is a direct function of the dose rate, if clearance is constant. In first order kinetics (clearance is constant), plasma concentration attained is directly proportional to the dose rate. Thus, doubling of dose rate from 10 to 20 mg/ min, will double the steady state plasma concentration (from 2 to 4 mg/dl).

Ref Katzung

49. D. 2.0 L/hr

Clearance = Rate of Elimination / Plasma Concentration

= 20 mg /hr / 10 mg/L = 2L / hr

Ref Katzung

50. A. Total body clearance

Maintenance dose is determined by clearance.

Maintenance dose = CL × Plasma concentration required

Ref KDT

51. D. 80 L

V_d = Amount Administered / Plasma Concentration

= 4 g / 50 ug / ml = 80L

Ref Katzung

52. D. The first pass effect is the result of elimination of a drug after administration and before it enters systemic circulation.

- Inhalational route provides localized delivery to respiratory system and thus is associated with lesser adverse effects than the systemic routes like oral
- Option (a) is thus false.
- Option (b) is the definition of first pass metabolism as given in the text.
- When a drug is administered by rectal route, first pass metabolism is less than oral route. But sublingual administration completely avoids first pass metabolism. Therefore, option c is also wrong.
- Transdermal route is associated with slower absorption of a drug because the pore size is smaller. However, first pass metabolism is avoided because the drug directly enters the systemic circulation.

Ref Katzung

53. D. Urinary excretion would be accelerated by administration of NH4 C1, an acidifying agent

This question can be solved by the knowledge that basic drugs are ionized in the acidic medium and vice-a-versa. This antihistamine drugs a weak base and will be highly ionized in the acidic urine. As ionized drugs cannot be reabsorbed in the nephron, urinary acidifying agents like NH, C1 will accelerate excretion of this agent. On the other hand, $NaHCO_3$, will decrease its excretion by increasing the unionized form. Blood pH is slightly alkaline, whereas gastric pH is highly acidic. Basic drugs are ionized more in the acidic pH, therefore option (c) is false. Only ionized molecules can cross the membranes, therefore more drug will be absorbed by the small intestine (alkaline pH) than by the stomach.

Ref Katzung

54. D. Chronic administration of cimetidine with the drug

- Cimetidine is a microsomal enzyme inhibiting drug. It increases the duration of action of the drugs metabolized by these enzymes On the other hand rifampicin and phenobarbitone

are enzyme inducers and will decrease the duration of action of such drugs.

- Displacement from binding sites increases the free drug that can be quickly metabolized.

Ref KDT

55. D. Plasma protein binding

Glomerular filtration is dependent on renal blood flow and plasma protein binding. It does not depend on the lipid solubility

Ref KDT

56. D. Acetylation

Most of the phase 1 reactions and glucuronide conjugation (phase II reaction) are catalyzed by microsomal enzymes. These enzymes can be induced or inhibited by drugs. Acetylation is carried out by N-acetyl transferase, a non-microsomal enzyme.

Ref KDT

57. A. High plasma protein binding decreases the volume of distribution

When a drug is highly bound to plasma proteins, it is more likely to stay in blood and thus Vd is less. Glomerular filtration depends on renal blood flow and plasma by protein binding. Highly protein bound drugs are less likely to be filtered by the glomerulus. Due to non-specific binding sites on plasma proteins these drugs are subjected to several drug interactions.

Ref Katzung

58. C. They produce high peak plasma concentration of the drug

Transdermal route is employed for highly lipid soluble drugs that can traverse intact skin, the size of the pores in transdermal patch is adjusted to produce a uniform and smooth absorption of the drug. This will thus, Produce a delayed and smaller peak in the plasma concentration. As the drug is going directly in the blood stream, first pass metabolism is avoided.

Ref KDT

59. B. Redistribution

Highly lipid soluble drugs like Thiopentone are quickly distributed to the tissue having high blood supply (like brain). If the target organ is also having high blood supply, drug action will be very quick. This is the case with general anesthetics like thiopentone. Now, the drug will be distributed to less vascular tissues like fat and muscle Movement of the drug outside Me brain results in the termination of its action. This is called redistribution.

Ref KDT

60. A. Conversion of lipid soluble drugs to water soluble metabolites

After metabolism most of the drugs become inactive and are excreted through the kidney. Lipid soluble drugs will be reabsorbed whereas water soluble drugs are easily excreted. Thus, metabolism of drugs helps in the conversion of lipid soluble drugs to water soluble metabolites.

Ref Katzung

61. C. More than the GFR

After filtration from glomerulus, a drug may undergo two processes (tubular reabsorption and tubular secretion) before going out from the body the body i.e. renal clearance.

- Suppose 100 mg of a drug is filtered by glomerulus and the renal clearance is 150 mg, it means 50 mg is coming from somewhere else, Le. Tubular secretion must be present. However, we cannot say that reabsorption is not occurring because if 20 mg is reabsorbed and 70 mg is secreted, same timing can happen.
- Suppose, 100 mg of a drug is filtered but renal clearance is 50 mg. Therefore, 50 mg must have gone somewhere I. e. Tubular reabsorption must be occurring, Again, we cannot say that tubular secretion is not present.

Ref KDT

62. D. High plasma protein binding

- If a drug is highly bound to plasma proteins, it is more likely to stay in the blood. Thus, its vd will be less.
- Low ionization favors the distribution of a drug because unionized molecules can cross the membranes of blood

vessels and the tissues.

- More lipid soluble drugs can easily cross the membranes and are more likely to be highly distributed.

Ref: Katzung

63. D. Diclofenac sodium

Diclofenac is an acidic drug and is non-ionized in the acidic medium of stomach. Therefore, it has the maximum chances of absorption from the stomach. Other drugs given in the options are basic drugs that are ionized at gastric pH.

Ref: Katzung; KDT

64. A. Weak acids

Strong electrolytes (strong acid and strong base) are ionized in all media, whether it is acidic or basic. Weak acids are ionized in the alkaline medium and are easily excreted.

Ref: Katzung

65. A. Inhalational

Inhalational anesthetic agents like halothane are used in the clinical practice by titration of dose with response.

Ref: KDT

66. D. Elimination

Ref: Katzung

67. D. First pass effect

Reduction in the amount of drug before it enters the systemic circulation is called first pass metabolism (also known a6 first pass effect) whereas if the amount of drug decreases after entry into the systemic circulation, it is called elimination. Latter includes excretion and metabolism.

Ref Katzung

68. A. Hepatic metabolism and renal excretion are the two most important mechanisms Drugstore

- Action of a drug can be terminated either by hepatic metabolism or by renal excretion. Most of the drugs are inactivated by metabolism. However, some drugs may be activated from inactive form (pro-drugs) and others may produce active metabolites.
- Some drugs may act away from blood e. g. Digoxin leaves blood stream and enters the heart to produce its action

Ref: KDT

69. D. Placebo

Note: Ref: KDT

Placebo:

An inert substance which is given in the garb of a medicine works by Psychodynamic rather than Pharmacodynamic means.

Uses:

- Control device in clinical trial of drugs
- To treat a patient who are placebo reactors

Placebos can release endorphins in brain causing analgesia

Naloxone blocks placebo analgesia.

Placebo effects are highly variable even in the same individual

Example:

- Placebo are lactose tablets/capsules and distilled water injection
- Sham surgeries

Ref: KDT

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Example:

- Placebo are lactose tablets/capsules and distilled water injection
- Sham surgeries

70. B. Adverse drug event

Note: Ref: KDT

Adverse drug event:

- Any untoward medical occurrence that may present during treatment

with a medicine, but which does not necessarily have a causal relationship with the treatment

- Cannot be predicted from the pharmacological profile of a drug

NOTE:

- Side effect, toxic effect and Secondary effects can be predicted from the Pharmacological profile of a drug

71. D. Adverse drug event

Note: Ref: KDT

Adverse drug event:

- Any untoward medical occurrence that may present during treatment with a medicine, but which does not necessarily have a causal relationship with the treatment
- Cannot be predicted from the pharmacological profile of a drug

NOTE:

- Side effect, toxic effect and Secondary effects can be predicted from the Pharmacological profile of a drug

72. B. NO

Note: Ref: GG

Soluble guanylyl cyclase:

- NO activites Soluble guanylyl cyclase
- Produces a 200- to 400-fold increase in the Vmax of guanylyl cyclase, leading to an elevation to cellular Cgmp
- This is how nitrates act

Membrane bound guanylyl cyclase Tyrosine phosphatases

- Natriuretic peptides act through this
- They increase c GMP

EXAMPLE: Nesiritide

73. D. Partial Agonist

Note: Ref: KDT

- Agonist: has affinity and intrinsic activity 1
- Partial Agonist: has affinity and intrinsic activity (0 to 1)
- Inverse Agonist: has affinity and intrinsic activity (0 to -1)
- Competitive Antagonist: has affinity and intrinsic activity (0)

74. D. Human micro dosing study

Note: Ref: KDT

Micro dosing:

- Conducted prior to phase I human clinical trail
- Involved limited human exposure
- No therapeutic/diagnostic intent in this phase
- Done for Pharmacokinetic profile of drug
- 1/100th or < 100 microgram dose tested
- Helps in choosing drug with more success rate
- Helps in reduction and replacement of animal testing

75. D. Highly ionized molecule are absorbed from stomach

Note: Ref: KDT

Factors affecting drug absorption

- First class metabolism reduces bioavailability
- **Highly ionized molecule are not at all absorbed from stomach or intestine or from any place**
- Heparin not absorbed due to its large size
- Drugs which dissolve in water are rapidly absorbed from GIT

76. D. Phase I

Note: Ref: KDT

Phase I: Human pharmacology and safety

Goals:

- Evaluation of safety and tolerability in humans using maximum tolerated dose (MTD) as end point
- Determination of qualitative and quantitative aspects of toxicity
- Determination of dose limiting toxicity
- Characterization of pharmacokinetic parameters (ADME)

77. B. Type E

Type E or end of treatment effects

- Withdrawal effects like rebound hypertension after clonidine withdrawal

Type A or Augmented (Predictable) reaction

- Mechanism based adverse reaction
- Side effects, Secondary effects, toxic effects, Drug withdrawal reactions

Type B or Bizarre (Unpredictable) reactions:

- Based on peculiarities of patient
- Allergy
- Idiosyncrasy
- Pharmacogenetics

Type C or Chronic effects

- Antipsychotics induced Tardive dyskinesia
- Cushing syndrome due to chronic use of Prednisolone

Type D or delayed effects

- Adverse effects occurring years after treating with a drug
- Secondary cancers induced by anti-cancer drugs
- Teratogenicity

78. D. Satisfy the priority health care needs

Note: Ref: National List of Essential Medicines (NLEM)

NLEM is one of the key instruments in balanced healthcare delivery system of a country which includes accessible, affordable quality medicine at all the primary, secondary and tertiary level of healthcare.

- First NLEM of India was release in 1996 and subsequently revised in **2003, 2011 and 2015**

DEFINITION:

- As per the WHO, "Essential Medicines are those that satisfy the priority health care needs of the population".
- The list is made with consideration to disease prevalence, efficacy, safety and comparative cost-effectiveness of the medicines. Such medicines are intended to be available in adequate amounts, in appropriate dosage forms and strengths with assured quality. They should be available in such a way that an individual or community can afford

79. C. Active drug to active metabolite

Note: Ref: KDT 7E/P 22

Active drug to active metabolite:

Examples-

- Codeine to Morphine
- Diazepam to Oxazepam
- Imipramine to Des-Imipramine

80. D. Verapamil

Note: Ref: KDT

Isoprenaline, Lignocaine and Testosterone undergo high first pass metabolism so not given orally

Drug undergo high first pass metabolism so given at high dose orally is Verapamil.

Autonomic Nervous System — Questions

81. Atropine reduces following secretions except

A. HCI secretion
B. Bile secretion
C. Intestinal secretions
D. Pancreatic secretions

82. Topical instillation atropine causes

A. Mydriasis
B. Abolition of light-reflux
C. Corneal anesthesia
D. All of the above

83. Anionic site of acetylcholine esterase enzyme can be occupied by all except

A. Edrophonium
B. Pralidoxime
C. Tacrine
D. Parathion

84. Edrophonium binds to

A. Anionic site of acetylcholine esterase enzyme
B. Esteratic site of acetylcholine esterase enzyme
C. Both A and B
D. None of the above

85. Rate limiting step in AC h synthesis is

A. Formation of acetate inside Presynaptic membrane
B. Synthesis of acetyl cholinesterase enzyme
C. Acetyl Co A synthesis
D. Choline uptake inside Presynaptic membrane

86. Which of the following cranial nerves doesn't have parasympathetic nerves

A. X
B. IX
C. III
D. VI

87. When there is ganglionic blockade by ganglionic blockers, the effect seen on heart rate is

A. Bradycardia
B. No effect is seen
C. Tachycardia
D. None of the above

88. Scopolamine hydrochloride is used for

A. Treating motion sickness
B. Preventing motion sickness
C. Both A and B
D. None of the above

89. Pralidoxime is ineffective as an antidote to carbaryl due to

A. The Esteric site of the enzyme is not free to provide attachment
B. Has weak anti-ChE activity
C. The anionic site of the enzyme is not free to provide attachment
D. Both A and C

90. Prazosin has a relatively high affinity at

A. A2A and a2B subtypes compared with a2C receptors
B. A2B and a2C subtypes compared with a2A receptors
C. A2A and a2C subtypes compared with a2B receptors
D. A2C and a2A subtypes compared with a2B receptors

91. Clonidine is used in to prevent diarrhea in diabetic patients with autonomic neuropathy because

A. Stimulation of a1 receptors in the G1 tract may increase absorption of sodium chloride and fluid and increase secretion of bicarbonate
B. Stimulation of a1 receptors in the G1 tract may increase absorption of sodium chloride and fluid and inhibit secretion of bicarbonate
C. Stimulation of a2 receptors in the G1 tract may decrease absorption of sodium chloride and fluid and increase secretion of bicarbonate
D. Inhibition of Imidazoline receptors in the GI tract may increase absorption of sodium chloride and fluid and inhibit secretion of bicarbonate

81. b	82. d	83. d	84. a	85. d	86. d	87. c	88. b	89. b	90. b
91. a									

92. Beta blockers with local anesthetic property is

A. Atenolol
B. Bisoprolol
C. Cartenolol
D. Acebutolol

93. The following drugs have alpha blocking property except

A. Chlorpromazine
B. Fluoxetine
C. Amitriptyline
D. Trazodone

94. The following are true about Dipivefrine except

A. Prodrug of adrenaline
B. Decreases hydraulic conductivity of trabecular filtering cells
C. Lowers intraocular tension by augmentation uveoscleral outflow
D. Reduces aqueous humor formation

95. Which of the following is not a use of Cholinomimetic Drugs

A. Glaucoma
B. Post-operative shivering
C. Myasthenia gravis
D. Post-operative atony

96. Following directly acting cholinergic drugs are natural alkaloids except

A. MUSCURAINE
B. Methacholine
C. Pilocarpine
D. Arecoline

97. Stimulation of M1 receptor leads to following action except

A. Increased cognitive function
B. Increased seizure activity
C. Increased in dopamine release and locomotion
D. Increase in depolarization of autonomic ganglia

98. Which of the following enzyme is more sensitive to organophosphates

A. Acetylcholine esterase
B. Angiotensin converting enzyme
C. Butyrylcholinesterase
D. All of the above

99. Which of the following anti-glaucoma drug cause bitter taste on topical application on eyes

A. Latanosprost
B. Betaxolol
C. Apraclonidine
D. Dorzolamide

100. Which of the following has more retinoprotective effects

A. Timolol
B. Levobunolol
C. Betaxolol
D. None

101. Which of the following acts by decreasing aqueous humor

A. Latanoprost
B. Dipivefrine
C. Trovaprost
D. Betaxolol

102. Growth of eyelashes is caused by

A. Dipivefrine
B. Timolol
C. Ohysiostigime
D. Bimatoprost

103. Beta-blockers WHICH can achieve longest half-life among the following is

A. Nodalol
B. Bisoprolol
C. Betaxolol
D. Nebivolol

104. Drug found to mutagenic Ames test in animals is

A. Phenatolamine
B. Prozosin
C. Bunazosin
D. Phenoxybenzamine

105. Which of the following is false about Yohimbine

A. Found in the bark of the tree Pausinystalia Yohimbine and in Rouwolfia root
B. Yohimbine also antagonizes effect of 5-HT
C. In the past, it was used extensively to treat male sexual dysfunction
D. Yohimbine is a noncompetitive antagonist selective for a2 receptor

106. Induction of apoptosis smooth muscle cells in BPH is shown by

A. Doxazosin
B. Terazosin
C. Prozosin
D. Both A and B

92. d	93. b	94. b	95. b	96. b	97. c	98. c	99. d	100. c	101. d
102. d	103. d	104. d	105. d	106. d					

107. An old patient Ram Kishore having asthma and glaucoma is to receive a β blocker. Regarding β blocking drugs, true is?

A. Timolol lacks the local anesthetic effects of propanolol
B. Metoprolol block β2 receptor selectively
C. Esmolol's pharmacokinetics are compatible with chronic topical use
D. Nadolol lacks β2 blocking action

108. Adverse effects that limit the use of adrenoceptor blockers are all except

A. Bronchoconstriction from a blocking agents
B. Impaired blood sugar response with a blocker
C. Increased intraocular pressure with β blockers
D. Heart failure exacerbation from β blockers

109. Propanolol is useful in the treatment of all of the following EXCEPT

A. Partial atrioventricular block
B. Angina
C. Idiopathic hypertrophic subaortic cardiomyopathy
D. Familial tremor

110. Which of the following effects of adrenaline would be blocked by phentolamine but NOT by propranolol

A. Contraction of the radial smooth muscle in the iris
B. Cardiac stimulation
C. Relaxation of bronchial smooth muscle
D. Relaxation of the uterus

111. All of the following are features of metoprolol in comparison to propranolol EXCEPT

A. It is less likely to cause bradycardia
B. It is ineffective in suppressing muscle tremor
C. It is safer in diabetics
D. It is less likely to worsen Raynaud's disease

112. Propranolol a non-selective beta blocker can be prescribed to decrease anxiety associated with

A. Short term stressful situations
B. Chronic neurotic disorder
C. Schizophrenia
D. Endogenous depression

113. An old man Baba comes to you and is diagnosed to be having benign hypertrophy of prostate. The drug which provides faster and greater symptomatic relief to this patient will be

A. Desmopressin
B. Finasteride
C. Terazosin
D. Sildenafil

114. The property which makes betaxolol different from timolol is that betaxolol

A. Is more efficacious in glaucoma
B. Produces less ocular side effects
C. Is shorter acting
D. Is a β1 selective blocker

115. A patient Ram kali presents with the symptoms suggestive of pheochromocytoma. Her urine metanephrine and vinylmandellic acid levels are above normal but normetanephrine level is less than normal. She later presents to you in emergency with chest pain and severe headache. An ECG indicates MI. Her blood pressure is 220/160 mm Hg and the heart rate is 160/ min. On examination she appears to be dehydrated also. The doctor attending her gives her phentolamine i.v. Within 8-10 min, she goes in a state of shock with her blood pressure being 36/0 mm Hg. Vasoconstrictors are ineffective and she dies within 4 hours. Which of the following best explains the exaggerated response to phentolamine in this patient?

A. Patient's humor secreting almost pure adrenaline and no noradrenaline
B. Escape of autonomic nervous system control over blood pressure
C. Metastasis of the tumor to the vasometer center in medulla
D. Overdose of phentolamine because of the rarity of such cases in the emergency

107. a	108. c	109. a	110. a	111. a	112. a	113. c	114. d	115. a

116. A drug that blocks the uptake of dopamine and norepinephrine into presynaptic nerve terminals and also blocks sodium channels in the axonal membrane is

A. Ephedrine B. Imipramine
C. Fluoxetine D. Cocaine

117. Which of the following drugs will decrease heart rate in a patient with a normal heart rate but will have little effect on heart rate in a cardiac transplant recipient?

A. Phenylephrine
B. Adrenaline
C. Noradrenaline
D. Isoproterenol

118. B_2 selective agonists are often effective in

A. Angina due to coronary insufficiency
B. Delayed labour
C. Asthma
D. All the above

119. The neurotransmitter agent that is normally released in the SA node of the heart in response to increased blood pressure is

A. Dopamine
B. Adrenaline
C. Noradrenaline
D. Acetylcholine

120. A child, Ramu has swallowed the contents of 2 bottles of a nasal decongestant whose primary ingredient is a adrenoceptor agonist drug. The signs of an activation that may occur in this patient include

A. Tachycardia
B. Vasodilation
C. Dilatation of pupil
D. All of the above

121. The correct statement regarding adrenergic neuron blocking drugs is

A. Do not block any effect of injected adrenaline
B. Block the action of adrenaline on neuronal a2 adrenoceptor
C. Block both a and P adrenoceptor mediated effects of injected adrenaline
D. Do not block the effects of sympathetic nerve stimulation

122. A patient in shock comes to you in trauma ward. You examine him and decide not to give Mm vasoconstrictors. Which is the type of shock your patient is having?

A. Neurogenic shock
B. Hemorrhagic shock
C. Hypotension due to spinal anesthesia
D. Secondary shock

123. A drug is shown to activate dopaminergic D_1 and D_2 and adrenergic a and b_1, but not b_2 receptors. Which of the following can be the drug being talked about?

A. Dobutamine
B. Methoxamine
C. Phenylephrine
D. Dopamine

124. Which of the following drugs shows the phenomenon of vasomotor reversal of Dale after administration of an adrenergic blocker?

A. Noradrenaline
B. Isoprenaline
C. Adrenaline
D. All of the above

125. The only non-catecholamine sympathomimetic drug out of the following is

A. Adrenaline
B. Dopamine
C. Isoprenaline
D. Ephedrine

126. What is the most dangerous effect of belladonna in very young children?

A. Hyperthermia
B. Dehydration
C. Hallucination
D. Hypertension

116. d	117. a	118. c	119. d	120. c	121. a	122. d	123. d	124. c	125. d
126. a									

127. You are being asked to give your expert opinion as a toxicologist regarding an effective antidote for belladonna poisoning. Which of the following agents would you suggest?

A. Neostigmine
B. Pilocarpine
C. Methacholine
D. Physostigmine

128. A drug 'X' belongs to the anticholinergic drug group. It is primarily used in pre anesthetic medication and also during surgery. Which of the following can be 'X'?

A. Pipenzolate methyl bromide
B. Isopropamide
C. Dicyclomine
D. Glycopyrrolate

129. The difference between hyoscine and atropine is that hyoscine

A. Exerts more potent effects on the heart than on the eye
B. Is longer acting
C. Has weaker antimotion sickness activity
D. Exerts depressant effects on the CNS at relatively low doses

130. Intramuscular injection of atropine causes initial bradycardia. The reason for this effect being seen is

A. Blockade of muscarinic auto receptor on vagal nerve endings
B. Stimulation of medullary vagal center
C. Stimulation of vagal ganglia
D. Blockade of M2 receptors of SA nodal cells

131. Mr. James has just been diagnosed with myasthenia gravis. You are his physician and are considering different therapies for his disease. Neostigmine and pyridostigmine may cause which one of the following?

A. Bronchodilation
B. Cycloplegia
C. Irreversible inhibition of acetylcholinesterase
D. Diarrhea

132. A 28-year-old woman has been treated with several autonomic drugs for about a month. Which of the following signs would distinguish between an overdose of a muscarinic blocker and a ganglionic blocker?

A. Postural hypotension
B. Blurred vision
C. Dry mouth, constipation
D. Mydriasis

133. Lallu, a farmer comes to you in the emergency in comatose state. Patient had profuse sweating and lacrimation. Diarrhea and urination were apparent. On examination pupil was constricted and BP of the farmer was 80/60 mm Hg. You make a diagnosis of anticholinesterase poisoning. You decide to administer him atropine. All of the following actions will be reversed by atropine EXCEPT

A. Hypotension
B. Central excitation
C. Bronchoconstriction
D. Muscle paralysis

134. Sunder Lal, 28-year-old farmer is found convulsing in the farm. Heartrate is 100 min and blood pressure is 180/110 mm Hg. Diarrhea, sweating and urination are apparent. Pupils are pin point. Drug poisoning is suspected. Most probable cause is

A. Organophosphate poisoning
B. Acetaminophen overdose
C. Amphetamine toxicity
D. Atropine poisoning

135. A direct acting cholinomimetic that is lipid soluble and has been used in the treatment of glaucoma is

A. Pilocarpine
B. Acetylcholine
C. Physostigmine
D. Neostigmine

127. d	128. d	129. d	130. a	131. d	132. a	133. d	134. a	135. a

136. Several children at a summer camp were hospitalized with symptoms thought to be due to ingestion of food containing botulinum toxin. The effects of botulinum toxin are likely to include

A. Bronchospasm
B. Diarrhea
C. Cycloplegia
D. Skeletal muscle spasms

137. Which of the following is the longest acting ocular beta blocker?

A. Timolol B. Cartiolol
C. Metoprolol D. Betaxolol

138. You are in the eye OPD and wish to use topical beta blocker in a patient. The chosen drug by you should a have all the following properties EXCEPT

A. High lipophilicity
B. High ocular capture
C. Strong local anesthetic activity
D. Low systemic activity

139. Agonistic action at which of the following adrenergic receptors results in the reduction of aqueous secretion?

A. B_1 receptor
B. A2 receptor
C. B_2 receptor
D. M_2 receptor

140. Which of the following properties make pyridostigmine different from neostigmine?

A. It is 1LTore potent
B. It produces less muscarinic side effects
C. It does not have any direct action on NM receptors
D. It is longer acting

141. Which of the following provides the best explanation for neostigmine being preferred over physostigmine for treating myasthenia gravis

A. It has additional direct agonistic action on nicotinic receptors at the muscle end plate
B. It is better absorbed orally
C. It has longer duration of action
D. It penetrates blood brain barrier

142. A patient Raj Kishore was given pilocarpine. All of the following can be the features seen in him except

A. Cycloplegia B. Sweating
C. Salivation D. Miosis

143. All of the following effects are seen with cholinergic muscarinic receptor stimulation except

A. Sweating
B. Brady cardia
C. Urination
D. Rise in blood pressure

136. c	137. d	138. c	139. b	140. d	141. a	142. a	143. d

Autonomic Nervous System — Explanations

81. B. Bile secretion

Atropine decreases:

- Secretion of acid, pepsin and mucus in the stomach
- Bicarbonate secretion is also reduced
- Intestinal and pancreatic secretions are not significantly reduced
- Bile production is not under cholinergic control, so not affected

Thus, option B is correct. Ref: KDT, Topic: anticholinergics

82. D. All of the above

Topical instillation atropine causes:

- Mydriasis
- Abolition of light reflux
- Cycloplegia lasting 7-10 days
- Has a mild anesthetic action on the cornea

Thus, option D is correct. Ref: KDT, Topic: anticholinergics

83. D. Parathion

Parathion is an organophosphate and it binds to esteric site of acetylcholine esterase enzyme

- Edriphonium is a carbamate and tacrine is a Acridine derivative
- They both attach only to the anionic site and do not form covalent bonds with the enzyme

Pralidoxime:

- Cholinesterase reactivators
- Has a positively charged quaternary nitrogen: attaches to the anionic site of the enzyme which remains unoccupied in the presence of organophosphate inhibitors
- Organophosphates attach only to the esteratic site forming covalent bonds.

Thus, option D is correct. Ref: KDT, Topic: Cholinergics

84. A. Anionic site of acetylcholine esterase enzyme

- Edrophenium and tacrine attach only to the anionic site and do not form convalent bonds with the enzyme
- Reactivation of edrophonium-inhibited enzyme occurs in < 10 min, and does not involve hydrolysis of the inhibitor, but only its diffusion, so the action is brief
- Organophosphates attach only to the esteratic site forming covalent bonds

Thus, option A is correct. Ref: KDT, Topic: cholinergics

85. D. Choline uptake inside Presynaptic membrane

- Rate limiting step in AC h synthesis is Choline uptake inside Presynaptic membrane
- Hemicholinium (HC3) blocks choline uptake and depletes Ach

Thus, option D is correct. Ref: KDT, Topic: cholinergics

86. D. VI

Parasympathetic

Cranial nerves: III, VII, IX, X

Sacral: S2, S3 and S4

Thus, option D is correct. Ref: KDT, Topic: cholinergics

87. C. Tachycardia

When ganglionic blockers, the query is whether it increases or decreases heart rate, this depends on predominant tone on particular organ or tissue.

The predominant tone on heart is Parasympathomimmetic, so it will have decreased heart rate.

But when ganglion is blocked, there will be increased heart rate (tachycardia)

Thus, option C is correct. Ref: KDT, Topic: ganglionic blockers

88. B. Preventing motion sickness

Scopalamine:

- Effective in preventing motion sickness, probably by blocking neural pathways from the vestibular apparatus in the inner ear to the emeric center in the brainstem
- Drug should be given prophylactically because administration after symptoms have set in is less effective, so not given in treatment of motion sickness

Thus, option B is correct. Ref: GG Topic: Anti-Cholinergics

89. B. Has weak anti-ChE activity

Pralidoxime:

- The anionic site of the enzyme is not free to provide attachment to it
- Contraindicated in carbamate poisoning as it has weak anti-ChE activity of its own

Thus, option B is correct. Ref: KDT, Topic: Cholinergics

90. B. A2B and a2C subtypes compared with a2A receptors

Prozosin:

- Has a relatively high affinity at a2B and a2C subtypes compared with a2A receptors
- Is much more portent in blocking a1 than a2 receptors
- Has similar potencies at a1A, a1B and a1D subtypes
- Is a relatively potent inhibitor of cyclic nucleotide phosphodiesterases
- Have fourable effects on serum lipids in humans decreasing low-density lipoproteins (LDL) and triglycerides while increasing concentrations of high-density lipoproteins (HDL)

Thus, option B is correct. Ref: GG Topic : Alpha blockers

91. A. Stimulation of a1 receptors in the G1 tract may increase absorption of sodium chloride and fluid and increase secretion of bicarbonate

- Clonidine is used in to prevent diarrhea in diabetic patients with autonomic neuropathy because
- Stimulation of a2 receptors in the G1 tract may increase absorption of sodium chloride and fluid and increase secretion of bicarbonate

Clonidine:

- It is an Imidazoline group of drug
- More potent agonists at a2 than a1 receptors
- Action of clonidine are from its a2 receptors agonism and also by Imidazoline receptors.
- Intravenous infusion of clonidine causes an acute rise in blood pressure, apparently because of activation of postsynaptic a2 receptors in vascular smooth muscle. **This is not seen when clonidine is given orally**
- A2 and imidazoline receptors mediate the hypotensive actions of centrally acting drugs

Clonidine is used in postural hypotension

- This is due to activation of postsynaptica 2 receptors in vascular smooth muscle
- In severe autonomic failure, reflux sympathetic responses on standing are absent, so postural hypotension is present
- Since the central effect of clonidine on blood pressure is unimportant in these patients, the drug can elevate blood pressure and improve the symptoms of postural hypotension

Thus, option A is correct. Ref: GG Topic Sympathomimetics

92. D. Acebutolol

Beta blockers with Local anesthetic or membrane stabilizing activity

- Pripranolol
- Acebutolol
- Carvedilol

Slight membrane-stabilizing effects

- Pinodolol
- Metoprolol
- Betaxolol
- Labetalol

Thus, option D is correct. Ref: GG Topic Sympatholytics

93. B. Fluoxetine

Drugs having alpha blocking property

Chlopromazine:

- Is an antipsychotic
- With blockade if alpha 1, Muscuranic, 5HT 2a and histamine 1 receptors

Amitriptyline

- Is a Tricycli antidepressant
- With blockade of alpha 1, muscuranic and histamine 1 receptors

Trazodone is atypical antidepressant

- First atypical antidepressant
- Less efficiently blocks 5-HT uptake
- Less a prominent a 1 adrenergic and weak 5-HT2 antagonistic actions
- Cause priapism and postural hypotension (due to alpha blockside)

Fluoxeteine

- First SSRI to be introduced
- And the longest acting having plasma t ½ of 2 days
- Its active demethylated metabolite has half-life of 7-10 days
- With no blockade of alpha, muscuranica and histamine receptors

Thus, option B is correct. Ref: KDT, Topic Sympathomimetics

94. B. Decreases hydraulic conductivity of trabecular filtering cells

Dipiverfrine:

- It is a prodrug of Adrenaline
- Penetrates cornea and is hydrolysed by the esterases into Adrenaline

The active adrenaline lower i.o.t. BY following mechanisms

- By increasing uveoscleral outflow
- B2 receptor mediated increase in hydraulic conductivity of trabecular filtering cells
- By reducing aqueous formation (a1 + a2receptor mediated)

Adverse effects

- Ocular burning

Thus, option B is correct. Ref: KDT, Topic: Glaucoma

95. B. Post-operative shivering

Uses of Cholinomimetic Drugs:

- Glaucoma
- Myasthenia gravis
- Post-operative atony
- Postoperative urinary retension
- Postoperative decurarization
- Alzheimer's disease
- Cobra bite
- Belladonna poisoning

Thus, option B is correct. Ref: KDT, Topic: Cholinergics

96. B. Methacholine

Directly acting cholinergic drugs which are natural alkaloids:

- MUSCURAINE
- Pilocarpine
- Methacholine
- Arecoline

Directly acting cholinergic drugs which are synthetic choline esters (MCB)

- Methacholine
- Carbachol
- Bethanecol

Thus, option B is correct. Topic : cholinergics

97. C. Increased in dopamine release and locomotion

Stimulation of M1 receptor leads to following action except:

- Increased cognitive function, so used in Alzheimer's disease
- Increase seizure activity
- Decrease in dopamine release and locomotion (remember the balance between cholinergic and dopamine in Parkinson' s disease)
- Increase in depolarization of autonomic ganglia

Thus, option C is correct. Ref: GG Topic : cholinergics

98. C. Butyrylcholinesterase

- Butyrylcholinesterase is more sensitive to organophosphates
- Acetylcholine esterase is more sensitive to Physostigmine (carbamates)

Thus, option C is correct. Ref: KDT, Topic: cholinergics

99. D. Dorzolamide

Dorzolamide:

- Topically useful carbonic anhydrase inhibitor side effects
- Ocular stinging, burning, itching, corneal edema and bitter taste

Thus, option D is correct. Ref: KDT, Topic: Glaucoma

100. C. Betaxolol

Betaxolol lowers aqueous humor formation

Has retinoprotective effects

- Blocks some Ca2+ channels and reduces Na+/Ca2+ influx in retina
- Even timolol has retinoprotective effects but less compared to Betaxolol

Thus, option C is correct. Ref: KDT, Topic: Glaucoma

101. D. Betaxolol

Betaxolol:

- **Acts on beta receptors and decreases aqueous humor formation**

Thus, option D is correct. Ref: KDT, Topic: Glaucoma

102. D. Bimatoprost

Prostaglandin analogues cause:

- Iris pigmentation growth of eyelashes, macular edema (latanoprost)

Bimatoprost:

- Cause growth of eyelashes
- Can be used in hypotrichosis

Thus, option D is correct. Ref: GG Topic Glaucoma

103. D. Nebivolol

Shortest half-life beta-blockers is Esmolol (0.15 hours)

Longest half-life:

- Nodalol (20-24 hours)
- Nebivolol (11-30 hours)
- Bisoprolol (9-12 hours)
- Betaxolol 15 hours

Thus, option D is correct. Ref: GG Topic Glaucoma

104. D. Phenoxybenzamine

Phenoxybenzamine:

- Is mutagenic in the Ames test
- Repeated administration of this drug to experimental animals causes peritoneal sarcomas and lung tremors
- The clinical significance of these findings is not known

Thus, option D is correct. Ref: GG Topic Sympatholytics

105. D. Yohimbine is a noncompetitive antagonist selective for a2 receptor

Yohimbine:

- Is a competitive antagonist that is selective for a2 receptors
- Is a indolealkylamine alkaloid and is found in the bark of the tree Pausinystalia Yohimbine and in Rouwolfia root
- Structure resembles that of Reserpine
- Readily enters the CNS, where it acts to increase blood pressure and heart rate
- Also enhances motor activity and produces tremors
- All these actions are opposite to those of clonidine, an a2 agonist
- Yohimbine also antagonizes effect of 5-HT

In the past, it was used extensively to treat male sexual dysfunction

Thus, option D is correct. Ref: GG Topic Sympatholytics

106. D. Both A and B

- Induction of apoptosis in prostate smooth muscle cells in BPH is shown by terazosin and Doxazosin
- This apoptosis may lessen the symptoms associated with chronic BPH by limiting cell proliferation
- The apoptotic effect of Terazosin and Doxazosin appears to be related to the quinazoline moiety rather than a1 receptor antagonism
- Tamsulosin, a non-quinazoline a1 receptor antagonist, does not produce apoptosis

Thus, option D is correct. Ref: GG Topic : Sympatholytics

107. A. Timolol lacks the local anesthetic effects of propanolol

- Metoprolol is a cardio selective (β, selective) blocker and not P. selective.
- Esmolol's is due shortest acting B-blocker and is useful for acute treatment.
- Nadolol is a non-selective B-blocker. It blocks both β1 as well as β2 receptors.
- Propanolol possesses maximum local anesthetic activity whereas timolol lacks this property.

Thus, option A is correct. Ref: KDT, Topic: Sympatholytics

108. C. Increased intraocular pressure with β blockers

Beta blockers are contraindicated in acute CHF because these can exacerbate the heart failure. Bronchoconstriction and impairment of blood glucose response is seen with P-blockers. These agents also decrease intraocular pressure and are used for the treatment of glaucoma.

Thus, option D is correct. Ref: KDT, Topic: Sympatholytics

109. A. Partial atrioventricular block

Beta blockers are contra-indicated in heart block because these can convert partial AV block to complete AV block. These agents are the drugs of choice for HOCM

Thus, option A is correct. Ref: KDT, Topic: Sympatholytics

110. A. Contraction of the radial smooth muscle in the iris

Smooth muscle of iris contains a receptor whereas heart, bronchus and uterus possess P-adrenergic receptors.

Thus, option A is correct. Ref: KDT, Topic: Sympatholytics

111. A. It is less likely to cause brady-cardia

Metoprolol is n cardio-selective P-blocker and thus is safer than non-selective blockers (like P[illegible]) in diabetes, asthmatics and [illegible] patients of peripheral vascular [illegible]ease (e.g. Raynaud's Disease). Due to lack of B2-blocking action, it cannot suppress muscle tremors Potential to cause bradycardia is similar to non-selective B-blockers. Drugs possessing ISA (like pindolol) are less likely to ca use bradycardia.

Thus, option A is correct. Ref: KDT Topic: Sympatholytics

112. A. Short term stressful situations

Propanolol is Used for controlling the performance anxiety, major manifestations of which are due to increased sympathetic, activity (tachycardia, palpitations, etc.)

Thus, option A is correct. Ref: KDT, Topic: Sympatholytics

113. C. Terazosin

Selective a1 blockers provide faster and greater Symptomatic relief Io the patients of BHP, but do not affect the disease progression. 5a reductase inhibitors like finasteride slow the disease progression but the beneficial effects are delayed (tasks about 6 months)

Thus, option C is correct. Ref: KDT, Topic: Sympatholytics

114. D. Is a β1 selective blocker

Betaxolol is less likely to induce bronchospasm than timolol.

Thus, option D is correct. Ref: KDT, Topic: Sympatholytics

115. A. Patient's humor secreting almost pure adrenaline and no noradrenaline

Urinary excretion of metanephrine in excess suggests the secretion of mainly adrenaline by the tumor (metanephrine is a metabolite of adrenaline and nor-metanephrine is a degradation product of nor-adrenaline). Adrenaline acts on a-receptors to cause increase in blood pressure (220/160 mmHg in this case) and on B_1 receptor to cause tachycardia (160 min in this patient). However, it also possesses B_2-action that is responsible for vasodilation.

This action is suppressed in the presence of strong a-action. On giving a-blockers like phentolamine. This B_2 action is unmasked leading to profound hypotension (36/0 mm Hg in this patient) This phenomenon is known as vasometer reversal of Dale.
Thus, option A is correct. Ref: KDT, Topic: Sympatholytics

116. D. Cocaine

It is a local anesthetic agent (acts by inhibiting Na_+ channel in the axonal membrane) that also possesses indirect sympathomimetic activity.
Thus, option D is correct. Ref: KDT, Topic: Sympathomimetics

117. A. Phenylephrine

- Nor-adrenaline decreases the heart rate due to reflex stimulation of baroreceptors. These reflexes are lost in a transplanted heart. However, by its B action, it produces a tachycardia.
- Phenylephrine is a selective al agonist, it has no direct effect on the heart but produces bradycardia due to reflex stimulation of baro-receptors. These reflexes are lost in a translated heart. Therefore, it produces no effect on heart.

Thus, option A is correct. Ref: KDT, Topic: Sympatholytics

118. C. Asthma

Beta-2 agonists are useful in premature uterine contractions to delay labour and not for delayed labor. Beta blockers are used in the treatment of angina.
Thus, option C is correct. Ref: KDT, Topic: Sympathomimetics

119. D. Acetylcholine

Whenever blood pressure increases there is reflex stimulation of baroreceptors. These release ACH and depresses the heart.
Thus, option D is correct. Ref: KDT, Topic: Cholinergics

120. C. Dilatation of pupil

Stimulation of a-receptors cause Mydriasis whereas tachycardia and vasodilation are due to activation of p-adrenergic receptors.
Thus, option C is correct. Ref: KDT, Topic: Sympathomimetics

121. A. Do not block any effect of injected adrenaline

Adrenergic neuron blocking drugs like Guanethidine inhibits the release of nor-adrenaline from the neuron. These drugs have no effect on a or preceptors Therefore, these may inhibit the effect of sympathetic nerve stimulation but will have no effect on exogamous adrenaline action.
Thus, option A is correct. Ref: KDT, Topic: Sympathomimetics

122. D. Secondary shock

Sympathomimetic drugs are indicated in all types of shock except secondary shock. In this condition, there is reflex vasoconstriction. Alpha blockers are useful in this type of shock.
Thus, option D is correct. Ref: KDT, Topic: Sympathomimetics

123. D. Dopamine

Dopamine has concentration dependent effects on various receptors. When infused at a rate of less than 2 ug kg/min., it stimulates only dopamine receptors (resulting in renal vasodilation). At 2-10 ug/kg/min. Infusion rate, it stimulates B_2 receptors also and at a rate greater than 1o ug/ kg/min. It causes vasoconstriction due to stimulation of a-receptors
Thus, option D is correct. Ref: KDT, Topic: Sympathomimetics

124. C. Adrenaline

Vasomotor reversal of dale is seen with adrenaline. when this drug is infused quickly, initially there is rise in blood pressure (due to stimulation of a receptors) followed by prolonged fall (B_2, action). a-blocking drugs inhibit the initial rise and only fall in blood pressure is recorded. This is known a vasomotor reversal. Nor-adrenaline has 11o P, activity and Isoprenaline lacks a activity. Therefore, cannot demonstrate this phenomenon.

Thus, option C is correct. Ref: KDT, Topic: Sympathomimetics

125. D. Ephedrine

Catecholamines are the drugs having dihydroxybenzene nucleus in its structure. Adrenaline, Isoprenaline and dopamine contain this structure.

Thus, option D is correct. Ref: KDT, Topic: Sympathomimetics

126. A. Hyperthermia

Atropa belladonna contains anticholinergic principles like atropine and hyoscine. Atropine is contra-indicated in children due to the risk of hyperthermia.

Thus, option A is correct. Ref: KDT, Topic: parasympatholytics

127. D. Physostigmine

Being tertiary amine, physostigmine can reverse CNS manifestations of belladonna (source of atropine) poisoning. It is therefore, preferred as an antidote for this type of poisoning.

Thus, option D is correct. Ref: KDT, Topic: cholinergics

128. D. Glycopyrrolate

Glycopyrrolate is used to reduce the secretions (to prevent reflex bronchospasm) during anesthesia. It is mainly used as pre-anesthetic medication.

Thus, option D is correct. Ref: KDT, Topic: parasympatholytics

129. D. Exerts depressant effects on the CNS at relatively low doses

Hyoscine is a CNS depressant and call be used as truth scrum (to induce twilight sleep). Atropine at low doses stimulates the brain whereas inhibits it at very high concentration.

Thus, option D is correct. Ref: KDT, Topic: parasympatholytics

130. A. Blockade of muscarinic auto receptor on vagal nerve endings

Atropine is n non-selective antagonist of M_1 M_2 and M_3, muscarinic receptors. M_2, cholinergic receptors are responsible for bradycardia and blockade of these receptors can result in tachycardia. Atropine initially acts on presynaptic M, receptors (normally decrease the release of ACH) and result in greater release of ACH which is responsible for bradycardia. Later on, lockable of M_2 receptors will lead to tachycardia.

Thus, option A is correct. Ref: KDT, Topic: parasympatholytics

131. D. Diarrhea

Neostigmine and pyridostigmine are reversible cholinesterase inhibitors that can cause cholinergic adverse effects like diarrhea and increased secretions ·67. Ans. (d) Blockade of muscarinic auto-receptors on vagal nerve endings.

Thus, option D is correct. Ref: KDT, Topic: Cholinergics

132. A. Postural hypotension

Postural hypotension is due to blockade of sympathetic system. Ganglion blockers inhibit the transmission through both sympathetic as well as parasympathetic ganglia whereas muscarinic blockers inhibit only parasympathetic activity.

Thus, option A is correct. Ref: KDT, Topic: parasympatholytics

133. D. Muscle paralysis

Atropine is a non-selective antagonist at muscarinic receptors. It can penetrate blood brain barrier and reverse the muscarinic action in the CNS. It can also reverse hypertension and bronchoconstriction caused due to stimulation of muscarinic receptors. However, muscle paralysis is due to Nicotinic W.) action on which it has no activity.

Thus, option D is correct. Ref: KDT, Topic: parasympatholytics

134. A. Organophosphate poisoning

All the symptoms are of anticholinesterase poisoning except raised blood pressure and heart rate. At high doses, ACH can stimulate N. and NM receptors ·These symptoms may occur due to the nicotinic actions of ACH.

Thus, option A is correct. Ref: KDT, Topic: cholinergics

135. A. Pilocarpine

Pilocarpine is a directly acting and physostigmine is an indirectly acting cholinomimetic useful for glaucoma.

Thus, option A is correct. Ref: KDT, Topic: cholinergics

136. C. Cycloplegia

Botulinum toxin interferes with the release of ACH and thus acts as a Para sympatholytic agent. Bronchospasm and diarrhea are the symptoms of muscarinic stimulation whereas muscle spasms may be seen on nicotinic stimulation. Cholinergic drugs cause cyclospasm whereas anticholinergics result in Cycloplegia.

Thus, option C is correct. Ref: KDT, Topic: anticholinergics

137. D. Betaxolol

Betaxolol is a cardio selective p-block useful in glaucoma. It is longer acting than Timolol. Another non-selective P-blocker used topically for the treatment of glaucoma is levobunolol.

Thus, option D is correct. Ref: KDT, Topic: sympatholytics

138. C. Strong local anesthetic activity

Timolol and betaxolol are the preferred P-blockers for the treatment of glaucoma because they lack local anesthetic activity. Drugs possessing this property increase the risk of corneal ulcers.

Thus, option C is correct. Ref: KDT, Topic: sympatholytics

139. B. A_2 receptor

Stimulation of a2 receptors located on ciliary epithelium reduces secretion of aqueous humor.

Thus, option B is correct. Ref: KDT, Topic: glaucoma

140. D. It is longer acting

- Pyridostigmine acts for 3-6 hours as compared to 0. 5-2 hours' duration of action of neostigmine.
- It is less potent than neostigmine.
- Rest of the properties are similar to neostigmine.

Thus, option D is correct. Ref: KDT, Topic: glaucoma

141. A. It has additional direct agonistic action on nicotinic receptors at the muscle end plate

Neostigmine is a quaternary ammonium derivative and is lipid insoluble. Its absorption from GIT and penetration in the brain and cornea is much less than physostigmine. It produces additional action on NM receptors.

Thus, option A is correct. Ref: KDT, Topic: cholinergics

142. A. Cycloplegia

Pilocarpine is, directly acting cholinergic drug. It causes miosis and cyclospasm (not Cycloplegia). It can increase all secretions of the body.

Thus, option A is correct. Ref: KDT, Topic: cholinergics

143. D. Rise in blood pressure

Stimulation of muscarinic (M_3) receptors decreases BP whereas parasympathetic system stimulation has no effect on BP because blood vessels contain M_3 receptors but no parasympathetic supply.

Thus, option D is correct. Ref: KDT, Topic: Cholinergics

144. The primary endogenous substrate for nitric oxide synthase (NOS) is

A. Citrulline
B. Heme
C. Methionine
D. Arginine

145. Which of the following is used to treat severe pulmonary hypertension?

A. Angiotensin 1
B. Bosentan
C. Omapatrilat
D. Endothelin

146. A drug X is useful in treatment of rheumatoid arthritis. It is available only in parential formulation and its mechanism of action is antagonism of tumor necrosis factor. Which of the following can be X?

A. Etanercept
B. Cyclosporine
C. Penicillamine
D. Phenylbutazone

147. A drug that is effective for rheumatoid arthritis but is not appropriate for osteoarthritis is

A. Acetaminophen
B. Keterolac
C. Rofecoxib
D. Infliximab

148. Rasburicase is a newer drug used in gout. It acts by

A. Decreasing urate synthesis
B. Decreasing intestinal absorption of uric acid
C. Increasing renal excretion of uric acid
D. Increasing urate oxidation

149. Allopurinol is useful in all of the following conditions EXCEPT

A. Acute gouty arthritis
B. Cancer chemotherapy induced hyperuricemia
C. Hydrochlorothiazide induced by hyperuricemia
D. Kala-azar

150. Drug of choice for acute gout is

A. Colchicine
B. Allopurinol
C. Dexamethasone
D. Indomethacin

151. ll of the following drugs can produce hyperuricemia EXCEPT

A. Ethambutol
B. Sulfinpyrazone
C. Pyrazinamide
D. Hydrochlorothiazide

152. A new born was diagnosed as having a congenital abnormality that resulted in transposition of great vessels. While preparing the infant for surgery, the medical team needed to keep the ducts arteriosus open. They did this by infusing

A. Alprostadil
B. Cortisol
C. Indomethacin
D. Tacrolimus

153. Individuals with alcoholic cirrhosis of liver may develop severe hepatoxicity after doses of acetaminophen that are not toxic to individuals with normal liver function. This increased sensitivity to acetaminophen's toxicity is due to

A. Decrease availability of acetaldehyde dehydrogenase
B. Decreased activity of Cytochrome P450 enzymes
C. Increased liver blood flow
D. Decrease hepatocellular store of glutathione

144. d	145. b	146. a	147. d	148. d	149. a	150. d	151. b	152. a	153. d

154. A college student is brought to emergency after taking an overdose of a non-prescription drug. The patient is confused and lethargic. He has been hyperventilating and dehydrated. Arterial blood gas analysis demonstrates metabolic acidosis. In the management of this patient, which is NOT likely to be of any therapeutic value

A. Treatment with acetyl cysteine
B. Alkalization of urine
C. Correction of metabolic acidosis
D. Gastric lavage

155. A 3-year-old child presented to OPD with symptoms of influenza. Aspirin is contraindicated in this patient because of increased risk of

A. Reye's syndrome
B. Gastric bleeding
C. Thrombocytopenia
D. Fanconi syndrome

156. A patient comes to you complaining that whenever he takes aspirin for headache, he develops severe shortness of breath. Which of the following may be partly responsible for this effect?

A. Prostaglandin E
B. Thromboxane A2
C. Prostacyclin
D. Leukotrienes

157. Mechanism of action of aspirin in MI is

A. Inhibition of cyclooxygenase
B. Decreased serum lipids
C. Thrombolytic action
D. Inhibition of thromboxane synthesis

158. Aspirin is used in the prophylaxis of myocardial infarction because it results in

A. Inhibition of thromboxane synthetase
B. Decreased serum lipids
C. Coronary steal phenomenon
D. Inhibition of cyclooxygenase

159. Rofecoxib as compared to indomethacin is

A. Likely to be more effective in rheumatoid arthritis
B. Not likely to produce renal complications
C. Less likely to cause gastric ulcer and their complications
D. All of the above

160. A truck driver presented to the hospital with a minor soft tissue injury. Which of the following NSAID should not be prescribed to him?

A. Celecoxib
B. Naproxen
C. Diclofenac sodium
D. Indomethacin

161. The plasma half-life is aspirin

A. Is independent of dose
B. Is shorter for anti-inflammatory doses compared to that for analgesic dose
C. Can be increased by alkalinizing the urine
D. Is longer for anti-inflammatory doses compared to that for analgesic dose

162. All of the following actions of aspirin are mediated by inhibition of prostaglandin synthesis EXCEPT

A. Hyperventilation
B. Analgesia
C. Closure of patent ductus arteriosus
D. Bleeding tendency

163. All of the following effects are produced by inhibitors of prostaglandin synthesis EXCEPT

A. Prolongation of bleeding time
B. Prolongation of labour
C. Gastric mucosal damage
D. Prolongation of prothrombin time

164. True statement about cyclooxygenase-2 is

A. It is not inhibited by indomethacin
B. It generates cytoprotective prostaglandins in gastric mucosa
C. It is found only in fetal tissues
D. It is inducible

154. a	155. a	156. d	157. d	158. d	159. c	160. d	161. d	162. a	163. d
164. d									

165. Aspirin in low doses produces long lasting inhibition of platelet cyclooxygenase because

A. Platelet contain low quantity of COX
B. Platelets bind aspirin with high affinity
C. Platelet COX is inducible
D. Platelets cannot synthesize fresh COX molecules

166. Prostaglandin E_2 analogs can be used for all of the following conditions EXCEPT

A. Treatment of bronchial asthma
B. Cervical priming
C. Treatment of patent ductus arteriosus
D. Treatment of NSA1D induced peptic ulcer

167. Which of the following patient characteristics is a possible reason for the use of celecoxib in the treatment of arthritis?

A. History of peptic ulcer disease
B. History of severe rash after treatment with a sulfonamide antibiotic
C. History of gout
D. History of type 2 DM

168. The chief advantage of ketorolac over aspirin is that the former

A. Is available in a parenteral formulation that can be used intramuscularly or intravenously.
B. Can be combined more safely with an opioid such as codeine,
C. Does not prolong bleeding time.
D. Is less likely to cause acute renal failure in patients with pre-existing

169. Which of the following drugs reduces the activity of phospholipase A_2

A. Alprostadil B. Prednisolone
C. Aspirin D. Ibuprofen

170. Which of the following is a component of slow reacting substance of anaphylaxis (SRS-A)?

A. LTB4 B. Misoprostol
C. Prostacyclin D. LTC4

171. Which of the following drugs inhibit platelet cyclooxygenase reversibly

A. Ibuprofen B. Alprostadil
C. Aspirin D. Prednisolone

172. Choose the CORRECT statement about sumatriptan

A. It activates 5-HT1A receptors
B. It does not carry risk of precipitating coronary vasospasm
C. It is combined with ergotamine for the treatment of severe migraine
D. It tends to suppress both pain and vomiting in migraine

173. Ergot alkaloid commonly used to prevent post-partum hemorrhage is

A. Ergotamine
B. Dihydroergotamine
C. Dihydroergotoxine
D. Methyl Ergometrine

174. Dihydroergotamine differs from ergotamine in the following respect

A. It is more potent an adrenergic blocker and less potent vasoconstrictor
B. It is a more potent oxytocic
C. It has antipeptic property
D. It has high oral bioavailability

175. Which of the following is most useful for reversing severe ergot induced vasospasm?

A. Ergotamine
B. Nitroprusside
C. Methysergide
D. Phenoxybenzamine

176. Two antihistaminics Terfenadine and astemizole were withdrawn from the market following the occurrence of cardiac arrhythmias when they were present in high levels in the blood. These effects were explained by the fact.

A. Treatment of these patients with erythromycin, a macrolide antibiotic
B. Use of these drugs by addicts
C. Genetic predisposition to metabolize succinylcholine slowly
D. Concurrent treatment with phenobarbital

165. d	166. c	167. a	168. a	169. b	170. d	171. a	172. a	173. d	174. a
175. b	176. a								

177. H, antihistaminics afford benefit in a number of conditions. All of the following conditions are benefited by antagonism of histamine EXCEPT

A. Common cold
B. Dermographism
C. Insect bite
D. Seasonal hay fever

178. Which of the following can reverse one or more smooth muscle effects of circulating histamine in humans

A. Granisetron
B. Ranitidine
C. Sumatriptan
D. Adrenaline

179. Erenumab, a CGRP receptor antagonist has been approved for

A. ITP
B. Migraine
C. Atopic dermatitis
D. Plaque Psoriasis

180. Dose of the following anticancer need not be reduced while on Allopurinol therapy

A. Thioguanine
B. 6-Mercaptopurine
C. Azathioprine
D. All of the above

181. Following is/are orphan uses for Allopurinol

A. Lesch-Nyhan syndrome
B. Chagas disease
C. Ex vivo preservation of cadaveric kidneys prior to transplantation
D. All of the above

182. Tocilizumab is used in

A. Multicentric Castleman's disease
B. Systemic Sclerosis
C. Chronic gout
D. Rheumatoid Arthritis

183. A patient was on Rasburicase for hyperuricaemia, he had laboratory values of uric acis inspite of having symptoms of hyperuricaemia. The reason for this is

A. May be because of excess allantoin in the body
B. Rasburicase causes enzymatic degradation of the uric acid in blood samples
C. Both are correct
D. Both are false

184. Which of the following NSAID has property of inhibiting of Metalloproteinase activity

A. Naproxen
B. Nabumetone
C. Diclofenac
D. Nimesulide

185. Which of the following is incorrect about mechanism of action of Colchicine in acute gout

A. Inhibits the synthesis of uric acid
B. Binds to tubulin and causes its depolymerisation
C. Colchicine blocks cell division by binding to mitotic spindles
D. Colchicine inhibits the synthesis and release of the leukotrienes

186. Drug that can be used to prevent platelet aggregation and damage during hemodialysis or cardiopulmonary bypass is

A. Alprostadil
B. Epoprostenol
C. Latanoprost
D. Misoprostol

187. Lorcarserin is a

A. 5HT1B/1D Receptor Agonists
B. 5HT2B Receptor Agonists
C. 5HT1A Receptor Agonists
D. 5HT2C Receptor Agonists

188. Which of the following antihistamine has both H1 and H2 antagonist activity

A. Fexofenadine B. Epinastine
C. Azelastine D. Emedastine

189. Certolizuman is a

A. Fab fragment toward IL-1
B. Fab fragment toward IL-6
C. Fab fragment toward TNF-a
D. Fab fragment toward Nerve growth factor

177. a	178. d	179. b	180. a	181. d	182. d	183. b	184. d	185. a	186.b
187. d	188. b	189. c							

190. Which of the following stabilizes lysosomes and inhibit LOX

A. Diclodenac B. Ketoprofen
C. Naproxen D. Puroxicam

191. The most common side effect of sumatriptan nasal spray is

A. Bitter taste
B. Nasal irritation
C. Rhinitis
D. Excessive sneezing

192. Which of the following is a non-selective COX INHIBITOR

A. Celecoxib B. Parecoxib
C. Meloxicam D. Piroxicam

193. Which of the following statement is false about leflunomide

A. Used in treatment of RA
B. Reduced purine synthesis in actively dividing cells
C. Act by inhibiting dihydroorotate dehydrogenase
D. Inhibits proliferation of T and B cells

194. The following are true about PAF except

A. It is potent peptic ulcerogen
B. Released only by platelets during inflammation
C. Produced by fetus in third trimester
D. It increases vascular permeability and has chemotactic property

195. Highest COX 2 Selective inhibitor among the following is

A. Etoricixib B. Valdecoxib
C. Rofecoxib D. Celecoxib

196. Aprotinin is a

A. CGRP receptor antagonist
B. Kallikrein antagonist
C. Serotonin 1F agonist
D. Bradykinin receptor agonist

197. Following are Preferential COX-2 inhibitors except

A. Etodolac B. Nimesulide
C. Meloxicam D. Ketorolac

198. Which of the first generation antihistamine has mild sedative action

A. Triprolidine
B. Diphenhydramine
C. Dimenhydrinate
D. Meclizine

199. Following Prostaglandin is given by inhalational route

A. Epoprostenol
B. Misoprostol
C. Alprostadil
D. Treprostonil

200. Drug which acts by inhibiting influx of Ca2+ from endolymph into the vestobular sensory cells is

A. Doxylamine B. Cinnarizine
C. Meclizine D. Promethazine

201. Prokinetic drug which is mainly metabolized by Flavin monooxygenases is

A. Cisapride
B. Domperidone
C. Itopride
D. Metoclopramide

202. True statement about Prokinetic action of Domperidone and Metaclopramide is

A. Metaclopramide prokinetic action is not attenuated by atropine
B. Domperidone prokinetic action is attenuated by atropine
C. Domperidone prokinetic action is not attenuated by atropine
D. None of the above

203. The prokinetic activity of metoclopramide is mainly because of

A. Central D2 antagonism
B. Peripheral D2 antagonism
C. 5-HT4 agonism
D. Both B and C

204. All 5-HT receptors are heptahelical serpentine receptors EXCEPT

A. 5-HT_1 B. 5-HT_3
C. 5-HT_2 D. 5-HT_4

190. b	191. a	192. d	193. b	194. b	195. a	196. b	197. d	198. a	199. d
200. b	201. c	202. c	203. d	204. b					

205. True statement about fexofenadine is

A. It does not block cardiac K+ channels
B. It undergoes high first pass metabolism in liver
C. Terfenadine is an active metabolite of this drug
D. It has high affinity for central receptors

206. Ketoconazole should not be given to a patient being treated with astemizole because

A. Ketoconazole induces the metabolism of astemizole
B. Astemizole inhibits the metabolism of ketoconazole
C. Astemizole antagonizes the antifungal action of ketoconazole
D. Dangerous ventricular arrhythmias can occur

207. All of the following statements are TRUE about second generation antihistaminic agents EXCEPT

A. These do not impair psychomotor performance
B. The lack anticholinergic actions
C. These may process additional antiallergic mechanisms
D. These possess high anti-motion sickness activity

208. Mr. Surya Kant was prescribed a first generation antihistaminic drug. He should be advised to avoid

A. Consuming processed cheese
B. Strenuous physical exertion
C. Driving motor vehicles
D. All of the above

209. All of the following antihistaminic agents lack anticholinergic property except

A. Astemizole
B. Levo-cetrizine
C. Loratidine
D. Promethazine

210. Which of the following drugs can cause hypotension by release of histamine from mast cells?

A. Aspirin
B. Morphine
C. Procaine
D. Sulfadiazine

211. All of the following actions of histamine are mediated through H_1 receptors EXCEPT

A. Release of EDRP from vascular endothelium resulting in vasodilation
B. Bronchoconstriction
C. Release of catecholamines from adrenal medulla
D. Direct action on vascular smooth muscle causing vasodilation

212. A drug 'X' is an adrenergic blocker but paradoxically produces vasoconstriction 'X' is

A. Phenoxybenzamine
B. Prazosin
C. Tolazoline
D. Ergotamine

205. a	206. d	207. d	208. c	209. d	210. b	211. d	212. d

Autacoids — Explanations

144. D. Arginine

- NOS normally metabolizes arginine to NO and Citrulline.
- Arginine → Citrulline + NO
- NO is a potent vasodilator that acts by increasing cGMP.
- Thus, option D is correct. Ref: KDT, Topic: Autacoids

145. B. Bosentan

- Bosentan is a non-specific antagonist of endothelin receptors (both ETA and ETB). It is useful for the treatment of primary pulmonary hypertension
- Omapatrilat is a vasopeptidase inhibitor used for the treatment of CHF.

Thus, option B is correct. Ref: Katzung 10E/P 287.

146. A. Etanercept

Infliximab and Etanercept are TNF-antagonists useful for the treatment of rheumatoid arthritis. These are administered by parenteral route. TNF-a antagonists can cause reactivation of latent tuberculosis.

Thus, option A is correct. Ref: KDT, Topic: rheumatoid arthritis

147. D. Infliximab

It is a TNF-a antagonist that plays no role in osteoarthritis.

Thus, option D is correct. Ref: KDT, Topic: of rheumatoid arthritis

148. D. Increasing urate oxidation

Rasburicase and pegloticase are recombinant urate oxidase enzymes that convert insoluble uric acid to soluble allantoin.

Thus, option D is correct. Ref: Goodman Gilman 11E/P 710.

149. A. Acute gouty arthritis

Allopurinol is contra-indicated in acute gout. Rarely it can be used in kala agar patients.

Thus, option A is correct. Ref: KDT, Topic: Gout

150. D. Indomethacin

NSAIDs except aspirin are the agents of choice for the treatment of acute gout.

Thus, option D is correct. Ref: KDT, Topic: Gout

151. B. Sulfinpyrazone

This drug is uricosuric agent and is used in the treatment of hyperuricemia.

Thus, option B is correct. Ref: KDT, Topic: Gout

152. A. Alprostadil

Prostaglandins (like alprostadil) are used to keep ductus arteriosus patent whereas aspirin or indomethacin are used for the treatment (closure) of FDA.

Thus, option A is correct. Ref: KDT, Topic: Prostaglandins

153. D. Decrease hepatocellular store of glutathione

Chronic alcohol intake results in liver dysfunction and decreased glutathione stores. Deficiency of this compound increases the toxicity of acetaminophen cause NAPQ, a metabolite of this compound, can now react easily with sulfhydryl groups of the biomolecules. Alcohol also induces the enzymes responsible for conversion of acetaminophen to NAPA.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

154. A. Treatment with acetyl cysteine

This patient is a case of salicylate poisoning. Gastric lavage is done to remove unabsorbed poison. Metabolic acidosis must be corrected by sodium bicarbonate. Alkalization of urine will increase the excretion of this weakly acidic drug. Treatment with acetyl cysteine has no role in salicylate poisoning. It is the antidote of choice for paracetamol poisoning.

Thus, option A is correct. Ref: KDT, Topic: NSAIDS

155. A. Reye's syndrome

Aspirin can increase the risk of Reye's syndrome, if used in children with viral diseases.

Thus, option A is correct. Ref: KDT, Topic: NSAIDS

156. D. Leukotrienes

Aspirin inhibits COX enzyme and results in the diversion of AA pathway towards LT synthesis. As LTs are powerful bronchoconstrictor agents, these may result in the shortness of breath in patients who are susceptible. Aspirin acetylated COX starts producing lipoxins (known as aspirin triggered lipoxins) that also have bronchoconstrictor properties.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

157. D. Inhibition of thromboxane synthesis

See the difference from the above question. Here in the question, it is written thromboxane synthesis and not synthetase. Aspirin inhibits TX synthesis via inhibiting cox and thus this is more specific explanation of its antiplatelet action.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

158. D. Inhibition of cyclooxygenase

Aspirin acts as an antiplatelet drug in MI. It inhibits cox enzyme and thus reduces the synthesis of TXA_2. However, it has no effect on the enzyme, thromboxane synthetase. Therefore, answer here is the inhibition of cox.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

159. C. Less likely to cause gastric ulcer and their complications

Selective COX-2 inhibitors are less likely to cause GI complications like PUD. However, as COX-2 is also present constitutively in the kidney, chances of renal complications are similar. These drugs have similar or less efficacy than non-selective COX inhibitors.

Thus, option C is correct. Ref: KDT, Topic: NSAIDS

160. D. Indomethacin

Sedation caused by indomethacin can interfere with driving.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

161. D. Is longer for anti-inflammatory doses compared to that for analgesic dose

Aspirin and other salicylates show saturation kinetics (zero order) and thus, their half-life is not constant. Clearance at high doses (anti-inflammatory) is lesser than at low (analgesic) doses. Thus $t_{1/2}$ is more for anti-inflammatory dose than for analgesic dose.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

162. A. Hyperventilation

All other actions are mediated via inhibition of PG synthesis whereas hyperventilation caused by aspirin is due to respiratory stimulation.

Thus, option A is correct. Ref: KDT, Topic: NSAIDS

163. D. Prolongation of prothrombin time

Prothrombin time is increased by the drugs interfering with the coagulation pathway (e.g. warfarin). As cox has no role in coagulation, inhibitors of PG synthesis do not prolong PT. However, bleeding time (BT) is prolonged by the drugs interfering with platelet function. Aspirin increases BT by acting as an antiplatelet agent.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

164. D. It is inducible

COX-1 is a house-keeping enzyme that is responsible for the generation of gastro protective PGs. COX-2 is an inducible enzyme whose production is markedly increased at inflammatory sites. Indomethacin is a non-selective inhibitor of both isoforms of COX.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

165. D. Platelets cannot synthesize fresh COX molecules

Aspirin in low doses irreversibly inhibits COX enzyme in platelets and the endothelium. Platelets lack nucleus and thus cannot regenerate COX whereas endothelium can synthesize fresh enzyme. Net effect of this process is the inhibition of platelet cox and thus, TXA2 synthesis. Low TXA2 level results in the anti-aggregation of platelets.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

166. C. Treatment of patent ductus arteriosus

- PGE2 analogues are used to maintain the patency of ductus arteriosus whereas aspirin or indomethacin are used for the treatment of PDA.
- PGE2 is a bronchodilator and can be used to treat bronchial asthma via inhalational route.
- Cervical priming and NSAID induced PUD are other indications of this agent.

Thus, option C is correct. Ref: KDT, Topic: NSAIDS

167. A. History of peptic ulcer disease

Non-selective COX inhibitors on long term use are associated with peptic ulcer disease. These should be avoided in the patients having history of PUD. Selective COX-2 inhibitors like celecoxib are safe in this regard.

Thus, option A is correct. Ref: KDT, Topic: NSAIDS

168. A. Is available in a parenteral formulation that can be used intramuscularly or intravenously.

Ketorolac is the only NSAID that can be administered intravenously.

Thus, option A is correct. Ref: KDT, Topic: NSAIDS

169. B. Prednisolone

It is a powerful anti-inflammatory agent. It acts by inhibiting the synthesis of PG, TX and LT via the inhibition of phospholipase A, enzyme. However, its most important mechanism of anti-inflammatory action is the inhibition of chemotaxis.

Thus, option B is correct. Ref: KDT, Topic: NSAIDS

170. D. LTC_4

LTC4, D_4 and B_4 are known as slow reacting substance of anaphylaxis as these can cause bronchoconstriction.

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

171. A. Ibuprofen

Alprostadil (PGE,) and prednisolone do not inhibit cox enzyme whereas aspirin is an irreversible inhibitor of this enzyme.

Thus, option A is correct. Ref: KDT, Topic: NSAIDS

172. D. It tends to suppress both pain and vomiting in migraine

Sumatriptan decreases whereas ergotamine aggravates the vomiting of migraine. These two agents should not be administered concomitantly due to the risk of severe coronary spasm. Triptans act as agonists at $5HT_{1B/1D}$ receptors.

Thus, option D is correct. Ref: KDT, Topic: migraine

173. D. Methyl Ergometrine

Methylergometrine (methergin) is administered during delivery of anterior shoulder to prevent postpartum hemorrhage.

Thus, option D is correct. Ref: KDT, Topic: migraine

174. A. It is more potent an adrenergic blocker and less potent vasoconstrictor

Hydrogenation of ergot alkaloids decrease their vasoconstrictor action and increase the a-blocking activity.

Thus, option A is correct. Ref: KDT, Topic: migraine

175. B. Nitroprusside

This agent is a mixed dilator and is highly effective agent against ergot induced vasospasm. It is also the drug of choice for most of the hypertensive emergencies.

Thus, option B is correct. Ref: Goodman & Gilman 11/e p311. Topic: migraine

176. A. Treatment of these patients with erythromycin, a macrolide antibiotic

Astemizole and Terfenadine are metabolized by microsomal enzymes. Erythromycin inhibits these enzymes and raises the plasma concentration of these drugs. At high levels, these agents block cardiac K^+ channels leading to arrhythmias.

Thus, option A is correct. Ref: KDT, Topic: Antihistaminic

177. A. Common cold

In this condition, excessive secretions (like rhinorrhea) are due to cholinergic over activity. First generation antihistaminics possess anticholinergic property and therefore are effective for common cold. On the other hand, second generation agents (lacking anticholinergic actions) are ineffective.

Thus, option A is correct. Ref: KDT, Topic: Antihistaminic

178. D. Adrenaline

Adrenaline is a physiological antagonist of histamine. It reverses bronchoconstriction caused by histamine. Ranitidine is an n antagonist that decreases gastric acid secretion but has no effect on smooth muscles.

Thus, option D is correct. Ref: KDT, Topic: Antihistaminic p129

179. B. Migraine

Erenumab:

MOA:

- Mab against calcitonin gene-related peptide

USE:

- For the preventive treatment of migraine in adults
- Available as SC injection

180. A. Thioguanine

6-mercaptopurine and azathioprine

- Allopurinol inhibits the degradation of 6-mercaptopurine and azathioprine
- so the doses of these drugs need to be reduced

Thioguanine:

- Dose need not to be reduced
- Because it follows a different metabolic path and undergoes S-methylation

Thus, option A is correct. Ref: KDT, Topic: Gout

181. D. All of the above

Orphan uses for Allopurinol

Lesch-Nyhan syndrome

- Lowering the high plasma concentrations of uric acid
- No effect on disease progression
- Chagas Disease
- Ex vivo presentation of cadaveric kidneys prior to transplantation

Thus, option D is correct. Topic: Gout; Ref: GG

182. D. Rheumatoid Arthritis

Tocilizumab:

- Mab against IL-64
- Is FDA-approved for treatment of rheumatoid arthritis and systemic juvenile idiopathic arthritis

Thus, option B is correct. Topic: Rheumatoid Arthritis; Ref: GG

183. B. Rasburicase causes enzymatic degradation of the uric acid in blood samples

- Rasburicase causes enzymatic degradation of the uric acid in blood samples
- So when analyzing uric acid levels, special handling is required to prevent spuriously low values for plasma uric acid in patients receiving the drug.

Thus, option B is correct. Ref: GG, Topic : Gout

184. D. Nimesulide

Nimesulide:

- Weak PG synthesis inhibitor
- Relative COX-2 inhibitor

Other mechanism like:

- Inhibition of neutrophil activation
- Reduced generation of superoxide
- Inhibition of PAF synthesis & TNF a release,
- Free radical scavenging
- Inhibition of metalloproteinase activity
- Possibly activation of glucocorticoids receptors

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

185. A. Inhibits the synthesis of uric acid

Colchicine:

Mechanism of Action:

- Binds to tubulin, a microtubular protein, causing its depolymerisation
  - This disrupts cellular functions, such as the mobility of granulocytes, thus decreasing their migration into the affected area.
- Colchicine blocks cell division by binding to mitotic spindles
- Colchicine inhibits the synthesis and release of the leukotrienes
- Do not Inhibits the synthesis or promote the excretion of uric acid

Thus, option A is correct. Ref: KDT, Topic: Gout

186. B. Epoprostenol

PGI2 (Epoprostenol):

- Can be used to prevent platelet aggregation and damage during hemodialysis or cardiopulmonary bypass
- It also improves harvest of platelets for transfusion
- Used in primary pulmonary hypertension

Thus, option B is correct. Ref: KDT, Topic: Prostaglandins

187. D. 5HT2C Receptor Agonists

Lorcarserin

- Is a 5HT2C Receptor Agonists
- Promotes weight loss through decreased food consumption and increased satiety

Thus, option D is correct. Ref: GG; topic serotonin

188. B. Epinastine

- Epinatine has both H1 and H2 antagonist activity, which may help reduce eyelid edema
- Epinastine and azelastine exhibit mast cell-stabilizing and anti-inflammatory
- Properties
- Emesdastine is a highly selective H1 antagonist without these additional actions

Thus, option B is correct. Ref: GG Topic : antihistaminic

189. C. Fab fragment toward TNF-a

Certolizumab:

- Humanized anti-TNF-a monoclonal antibody
- Fab fragment toward TNF-a
- Induction or maintenance of remission in **moderate-to-severe Crohn disease** in patients who have not responded well to other therapies

Thus, option C is correct. Ref: GG, Topic Rheumatoid Arthritis

190. B. Ketoprofen

Ketoprofen:

- Propionic acid derivative
- Has additional action to stabilize lysosomes and inhibit LOX has been demonstrating.

Thus, option B is correct. Ref: KDT, Topic: NSAIDS

191. A. Bitter taste

- The most common side effect of sumatriptan nasal spray is Bitter Taste
- Subcutaneous injection of sumatriptan, patients often experience **irritation at the site of injection.**

Thus, option A is correct. Ref: GG Topic : Migraine

192. D. Piroxicam

Non-selective COX inhibitor:

- Enolic acid derivatives: Piroxican, Tenoxicam

Preferential COX-2 inhibitor:

- Nimesulide, Diclofenac, Aceclofenac **Meloxicam**, Etodolac

Selective COX-2 inhibitors:

- Celecoxib, Etoricoxib, Parecoxib

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

193. B. Reduced purine synthesis in actively dividing cells

Leflunomide:

MOA:

- Leflunomide is rapidly converted in the body to an active metabolite which inhibits dihydroorotate dehydrogenase and pyrimidine synthesis in actively dividing cells.
- Antibody production by B-cells may be depressed
- The active metabolite has a long t1/2of 2-3 weeks
- Inhibits proliferation of T and B cells

Note:

- Leflunomide is an alternative to Mtx or can be added to it, but the combination is more hepatotoxic
- Combination with sulfasalazine improves benefit.

Thus, option B is correct. Ref: KDT, Topic: Rheumatoid Arthritis

194. B. Released only by platelets during inflammation

Platelet Activating Factor:

- It is potent peptic ulcerogen
- Produced by fetus in third trimester
- Released by mainly WBC, Platelets, Vascular endothelium and kidney cells during inflammation but not only by platelets
- It increases vascular permeability and has chemotactic property

Rupatadine:

- Antihistamine has additional PAF antagonistic property
- Indicated in allergic rhinitis

Thus, option B is correct. Ref: KDT, Topic: Antihistaminic

195. A. Etoricixib

The relative degree of selectively of COX 2 inhibition is

Lumiracoxib = Etoricoxib Valdecoxib = Rofecoxib > Celecoxib

Thus, option A is correct. Ref: GG Topic NSAIDS

196. B. Kallikrein antagonist

- CGRP receptor antagonist
- Olcegepant & Telcagepant (used in migraine)
- Serotonin 1F agonist
- Lasmiditan (used in migraine)
- Bradykinin receptor antagonist
- Icatibant
- Kallikrein antagonist
- Aprotinin (used in coronary bypass surgery)

Thus, option B is correct. Topic Migraine

197. D. Ketorolac

Preferential COX-2 inhibitors:

- Nimesulide, Diclofenac, Aceclofenac
- Meloxicam, Etodolac

Selective COX-2 inhibitors:

- Celecoxib, Etoricoxib, Parecoxib

Non Selective COX inhibitors:

- Acetic acid derivatives
- Ketorolac, Indomethacin and Nabumetone

Thus, option D is correct. Ref: KDT, Topic: NSAIDS

198. A. Triprolidine

Thus, option A is correct. Ref: KDT, Topic: Antihistaminic

199. D. Treprostonil

In pulmonary HTN

- Treprostonil is given by continuous subcutaneous infusion or as an inhalation, consisting for four daily treatment sessions with none breaths per session
- IIoprost is a stable analog that is given by inhalation, but it needs to be given by nebulizer six to nine times daily.

Misoprostol:

- Is a PGE1 analog
- Misoprostol in combination with mifepristone or methotrexate is highly effective in the termination of early pregnancy.
- Approved in treatment of NSAID induced peptic ulcer
- Not given by inhalational route
- Intravaginal, oral tablet

Alprostadil (PGE1):

- To maintain patency of Ductus Arteriosus
- Injected into the penis causes erection lasting 1-2 hours

Thus, option D is correct. Prostaglandins Ref: GG

200. B. Cinnarizine

Cinnarizine:

- Antihistamine drug
- Antivertigo drug
- Has antimotion sickness property
- Probably acts by inhibiting influx of Ca2+ from endolymph into the vestobular sensory cells which mediates labyrinthine reflexes

Other H1 antihistaminics:

- Promethazine
- Diphenhydramine
- Dimenhydrinate
- Doxylamine
- Meclozine (Meclizine),
- Cinnarizine

Thus, option B is correct. Prostaglandins Ref: KDT, Topic:

201. C. Itopride

Itopride:

- Itopride is metabolized mainly by Flavin monooxygenases and not by CYP450 isoenzymes
- So Minimal drug interactions other options
- Cisapride, Domperidone and Metoclopramide metabolized mainly by CYP450 isoenzymes

Thus, option C is correct. Ref: KDT, Topic: serotonin

202. C. Domperidone prokinetic action is not attenuated by atropine

Domperidone:

- Its prokinetic action is not attenuated by atropine and is based only on D2 receptor blockade in upper g.i.t.

Metacloprapimde:

- The peripheral action can augment Ach release in the gut, but appears to be minor
- Its prokinetic action is attenuated by atropine.

Thus, option C is correct. Ref: KDT, Topic: serotonin

203. D. Both B and C

Metoclopramide:

- This is the primary mechanism
- Metoclopramide acts in the g.i.t. to enhance Ach release from myenteric motor neurons
- This results from 5-HT4 receptor activation on primary afferent neurons (PAN) of the ENS via excitatory interneurons
- The gastric hurrying and LES tonic effects are mainly due to this action which is synergized by Bethanecol and attenuated by atropine

Peripheral D 2 antagonism:

- Hastening gastric emptying
- Enhancing LES tone by augmenting Ach release
- This is the secondary mechanism

Thus, option D is correct. Ref: KDT, Topic: serotonin

204. B. 5-HT_3

All serotonin receptors are G-protein coupled receptors except 5-FIT. which is an inotropic receptor.

Thus, option B is correct. Ref: KDT, Topic: serotonin

205. A. It does not block cardiac K+ channels

Fexofenadine is an active metabolite of Terfenadine. It lacks K_+ channel blocking property, therefore is devoid of arrhythmogenic potential It is available as separate second generation H] blocking agent.

Thus, option A is correct. Ref: KDT, Topic: antihistaminic

206. D. Dangerous ventricular arrhythmias can occur

Ketoconazole, erythromycin and clarithromycin are potent inhibitors of microsomal enzymes. Astemizole, Terfenadine and Cisapride are the drugs that car block cardiac K_+ channels at high concentration. If administered along with microsomal ewe inhibitors, these drugs can result in torsades de pointes, a serious polymorphic ventricular tachycardia.

Thus, option D is correct. Ref: KDT, Topic: antihistaminic

207. D. These possess high anti-motion sickness activity

Anti-motion sickness activity is related to anticholinergic property. This property is exhibited by first generation compounds whereas second generation antihistaminics lack this potential.

Thus, option D is correct. Ref: KDT, Topic: antihistaminic

208. C. Driving motor vehicles

First generation antihistaminic agents cause sedation and impairment of psychomotor function.

Thus, option C is correct. Ref: KDT, Topic: antihistaminic

209. D. Promethazine

All the drugs listed in the question are second generation anti-histaminic agents except promethazine.

Thus, option D is correct. Ref: KDT, Topic: antihistaminic

210. B. Morphine

Basic drugs like morphine, d-TC and amphotericin B etc. Act as histamine liberators and can cause acute reaction leading to itching and hypotension

Thus, option B is correct. Ref: KDT, Topic: antihistaminic

211. D. Direct action on vascular smooth muscle causing vasodilation

Both H_1 and H_2 receptors cause vasodilation. H_1 receptors are present in the endothelium and cause vasodilation by releasing NO. However, H_2 receptors present on the smooth muscles and cause direct vasodilation.

Thus, option D is correct. Ref: KDT, Topic: antihistaminic

212. D. Ergotamine

Ergot alkaloids are the a-blockers that can cause vasoconstriction.

Thus, option D is correct. Ref: KDT, Topic: Migraine

213. All are true statements about Omalizumab except

A. Humanized monoclonal antibody of the IgGI subclass
B. It doesn't block binding of IgE to low-affinity IgE receptors (FceRIL, CD23) on other inflammatory cells)
C. Delivered as a single SC injection every 2 to 4 weeks
D. Binds tightly to free IgE in the circulation to form Omalizumab-IgE

214. The following statements are true about clicesonide except

A. Activated by the esterases in the lung
B. It has high pulmonary deposition, prolonged pulmonary residence time
C. Administered through a hydrofluoroalkaline propellant metered dose inhaler
D. Ciclesonide and des-Ciclesonide are least bound to plasma proteins

215. Which of the following is incorrect about inhaled corticosteroids

A. Optimal respirable particle range is between 1-5 microns
B. Chlorofluorocarbons (CFC) have higher output of aerosol particles compared to hydrofluoroalkane (HFA)
C. Higher particle size results in deposition in upper airways
D. Smaller particles size will result in expelling out of drug during exhalation

216. Preferred ICS in patients of asthma requiring high doses (>1000 ug) of ICS is

A. Beclomethasone dipropionate
B. Triamcinolone
C. Budesonide
D. All of the above

217. The following are mechanism of Methylxanthines in bronchial asthma and COPD except

A. Deactivation histone deacetylase
B. PDE 4 inhibition
C. Blockade of adenosine receptors
D. Interleukin-10 release

218. Beta 2 agonists used in asthma have anti-inflammatory effect. Which of the following Incorrect about their anti-inflammatory effect?

A. They inhibit mast cell mediator release
B. They have significant inhibitory effect on the chronic inflammation of asthmatic airways
C. They inhibit microvascular leakage
D. All of the above

219. Formoterol is FDA approved for treatment of following conditions except

A. Aspirin induced asthma
B. Treatment of asthma
C. Prophylaxis of exercise-induced bronchospasm,
D. COPD

220. Following statements are true about bambuterol except

A. Prodrug of terbutaline
B. Hydrolyzed by pseudocholinestrase in lungs
C. Used in chronic asthma
D. It is an amide drug

221. Which of the following inhaled corticosteroids (ICS) has long duration of action

A. Beclomethasone dipropionate
B. Fluticasone hemihydrate
C. Fluticasone propionate
D. Fluticasone furoate

213. b	214. d	215. b	216. c	217. a	218. b	219. a	220. d	221. d

222. Zileuton acts by

A. Inhibiting production of IgE
B. Inhibiting Cyclooxygenase
C. Inhibiting Lipoxygenase
D. Inhibiting mast cell degranulation

223. Proposed mechanism for cardiac arrhythmia cause by theophylline is due to

A. A 1 receptor antagonism
B. Both A 1 receptor antagonism and PDE 3 inhabitation
C. PDE 3 inhabitation
D. PDE 4 inhabitation

224. Following statements are true about Salmeterol except

A. Slow onset of action and longer acting due to more lipophilicity
B. Can be used alone or in combination with inhaled Glucocorticoids while treating asthma
C. More B2 selective than salbutamol and partial agonist at B2
D. Used to prevent Nocturnal Asthmatic Attacks and exercise induced asthma

225. Which of the following is incorrect about Arformoterol

A. It an enantiomer of Formoterol
B. It cannot be used with a nebulizer
C. It has twice the potency of racemic formoterol
D. It is FDA-approved for the long-term treatment of bronchoconstriction in patients with COPD

226. Which of the following is incorrect about Salmeterol

A. Not suitable monotherapy for acute attacks of bronchospasm
B. Salmeterol should not be sued more than twice daily
C. Salmeterol is metabolized by CYP3A4 to a-hydroxy-salmeterol
D. Not suitable for nocturnal asthma

227. Which of the following is a full agonist at beta 2 receptor

A. Formoterol
B. Salmeterol
C. Both A and B
D. None of the above

228. A 55-year-old female who is taking Propanolol for the management of a cardiovascular disease experiences an acute asthmatic attack. Which of the following drugs would you prescribe to attenuate this asthmatic attack?

A. Cromolyn sodium
B. Ipratropium bromide
C. Beclomethasone
D. Salbutamol

229. Which of the following B_2 agonists is given by inhalation, and is suitable for both terminating acute asthma attacks as well as for twice daily prophylaxis?

A. Formoterol
B. Bambuterol
C. Salmeterol
D. Terbutaline

230. Omalizumab is a monoclonal antibody used for treatment of

A. Digitalis Toxicity
B. Breast carcinoma
C. Rheumatoid arthritis
D. Bronchial asthma

231. One of the most common side effects of inhaled beclomethasone dipropionate is

A. Pneumonia
B. Pituitary adrenal suppression
C. Atrophic rhinitis
D. Oropharyngeal candidiasis

232. In comparison to inhaled adrenergic agonists, the inhaled anticholinergics?

A. Produce slower response-in bronchial asthma
B. Are better suited for control of an acute attack of asthma
C. Are more effective in bronchial asthma
D. Produce little benefit in chronic-obstructive lung disease

222. c	223. b	224. b	225. b	226. d	227. a	228. b	229. a	230. d	231. d
232. a									

233. Which of the following drugs CAN-NOT be administered by inhalation?

A. Budesonide
B. Ipratropium bromide
C. Theophylline
D. Terbutaline

234. Relatively higher dose of theophylline is required to attain therapeutic plasma concentration in

A. Those receiving cimetidine
B. Congestive heart failure patients
C. Those receiving erythromycin
D. Smokers

235. Which of the following statements about theophylline is-TRUE?

A. Its plasma half-life is longer in children as compared to that in adults
B. Its dose needs to be reduced in the smokers
C. It acts by increasing the formation of cAMP
D. Its use in asthma has declined because of narrow safety margin

236. Which of the following actions is NOT exhibited by methylxanthines?

A. Inhibit the acetylation of core histones
B. Induction of histone deacetylase
C. Anti-inflammatory action
D. Restore steroid responsiveness in COPD patients

237. Which of the following is delivered as an aerosol formulation through a dry powder inhaler.

A. Ipratropium bromide
B. Formoterol
C. Salmeterol
D. Indacaterol

233. c	234. d	235. d	236. d	237. d

213. B. It doesn't block binding of IgE to low-affinity IgE receptors (FceRIL, CD23) on other inflammatory cells)

Omalizumab:

- Humanized monoclonal antibody of the IgGI subclass
- Delivered as a single subcutaneous injection every 2 to 4 weeks
- Binds tightly to free IgE in the circulation to form Omalizumab-IgE
- It also blocks binding on IgE to low-affinity IgE receptors (FceRIL, CD23) on other inflammatory cells, including T and B lymphocytes, macrophages and possibly eosinophils to inhibit chronic inflammation
- Omalizumab also reduces levels of circulating IgE
- In severe extrinsic asthma it reduces exacerbation and steroid requirement
- The most frequent adverse effect was injection-site reactions (e.g. redness, stinging, bruising and induration)
- The major side effect of Omalizumab is an anaphylactic response, which is uncommon.

Thus, B is correct. Ref: GG, Topic : Asthma

214. D. Ciclesonide and des-Ciclesonide are least bound to plasma proteins

Cilcesonide

- Prodrug which is administered through a hydrofluoroalkane propellant metered dose inhaler
- Once it reaches the lungs, the parent compound is metabolized by esterases to desisobutyryl Ciclesonide (des-CIC), an active metabolite with a 100-fold greater affinity to the glucocorticoid receptor
- It has high pulmonary deposition, prolonged pulmonary residence time and on-site activation minimizes the risk for local side effects
- It's low oral bioavailability high hepatic clearance, and extensive plasma protein binding, among other factors, decrease the risk for systemic side effects
- Ciclesonide and des-Ciclesonide are highly bound to plasma proteins minimizing their systemic side effects
- It is a soft steroid

Thus, D is correct. Ref: Emma D. Deeks and Caroline M. Perry Ciclesonide. A review of its Use in the Management of Asthma. Drugs 2008;68 (12): 1741-1770

215. B. Chlorofluorocarbons (CFC) have higher output of aerosol particles compared to hydrofluoroalkane (HFA)

Inhaled corticosteroids

- Optimal respirable particle range is between 1-5 microns
- Higher particle size results in deposition in upper airways
- Smaller particles size will result in expelling out of drug during exhalation
- Hydrofluoroalkane (HFA) have higher output of aerosol particles compared to chlorofluorocarbons (CFC)

Thus, B is correct. Ref: KDT, Topic: Asthma

216. C. Budesonide

Preferred ICS in patients of asthma requiring high doses (>1000 ug) of ICS is:

- Budesonide
- Flutocasone propionate

Because they are preferred in patients who need high doses of ICSs and in children.

Thus, C is correct. Ref: GG, Topic : Asthma

217. A. Deactivation histone deacetylase

Mechanism of Actions-Theophylline:

- PDE inhibition: 3 & 4
- Blockade of adenosine receptors
- Interleukin-10 release

- Has a broad spectrum of anti-inflammatory effects, and there is evidence that its secretion is reduced in asthma. IL-10 release is increased by theophylline
- Effects on gene transcription
- Inhibits transcription of inflammatory genes
- Effects on apoptosis: (increased apoptosis of eosinophils and neutrophils)
- Activation of Histone deacetylase
- Recruitment of histone deacetylase-2 (HDAC2) by glucocorticoid receptors switches off inflammatory genes.
- Therapeutic concentrations of theophylline activate HDAC, thereby enhancing the anti-inflammatory effect of corticosteroids.

Thus, A is correct. Ref: GG, Topic : Asthma

218. B. They have significant inhibitory effect on the chronic inflammation of asthmatic airways.

Beta 2 agonists used in asthma have anti-inflammatory effect.

- Inhibitory effects of B2 agonists on mast cell mediatory release
- Inhibitory effects of B2 agonists on microvascular leakage
- B2 agonists may modify acute inflammation
- They DONOT have significant inhibitory effect on the chronic inflammation of asthmatic airways.

Thus, B is correct. Ref: GG; Topic: Asthma

219. A. Aspirin induced asthma

Formoterol:

FDA-approved for

- Treatment of asthma and bronchospasm
- Prophylaxis of exercise-induced bronchospasm
- COPD

Thus, A is correct. Ref: GG; Topic: Asthma

220. D. It is an amide drug

Bambuterol

- Prodrug of terbutaline
- It is an ester drug
- Hydrolyzed by pseudocholinestrase in lungs to active Terbutaline
- Used in chronic asthma
- Orally, single evening dose of 10-20 mg

Thus, D is correct. Ref: KDT, Topic: Asthma

221. D. Fluticasone furoate

Fluticasone furoate has the longest duration of action and is suitable for once-daily dosing.

Thus, D is correct. Ref: GG; Topic: Asthma

222. C. Inhibiting Lipoxygenase

Zileuton:

- 5-LOX inhibitor
- So, blocks LTC4/D4 as well as LTB4 synthesis
- Duration of action of zileuton is short and it has hepatotoxic potential.

Thus, C is correct. Ref: KDT, Topic: Asthma

223. B. Both A 1 receptor antagonism and PDE 3 inhabitation

Theophylline:

- Belongs to methylxanthines group of drugs
- It has bronchodilator action and nonbronchodilator effects

It has various mechanisms of action

- Inhabitation of Phosphodiesterase's
- Adenosine receptor antagonism
- Interleukin-10 release
- Prevents the translocation of the pro-inflammatory transcription factor NF-kB into the nucleus
- Promotes apoptosis in eosinophils and neutrophils in vitro
- Histone deacetylase activation

Side Effects:

The most common side effects are headache, nausea and vomiting, abdominal discomfort and restlessness and other side effects are described in the below table

Side Effects of Theophylline and Mechanisms	
Side Effect	Proposed Mechanism
Nausea and vomiting	PDE4 Inhibitation
Headches	PDE 4 Inhibitation
Gastric discomfort	PDE 4 Inhibitation
Diuresis	A1 receptor antagonism
Behavioural disturbance (?)	?
Cardiac arrhythmias	PDE 3 Inhibitation
	A1 receptor antagonism
Epileptic seizures	A1 receptor antagonism
PDE, Phosphodiesterase: A, Adenosine	

Thus, B is correct. Ref: GG, Topic: Asthma

224. B. Can be used alone or in combination with inhaled Glucocorticoids while treating asthma

Salmeterol

- Slow onset action
- More B2 selective than salbutamol
- More lipophilic so longer acting
- Used to prevent Nocturnal Asthmatic Attacks and exercise induced asthma
- Always used in combination with inhaled Glucocorticoids in Bronchial asthma but not alone

IN COPD

- LABA are effective bronchodilators that may be used alone or in combination with anticholinergics or ICS. LABA improve symptoms and exercise tolerance by reducing both air trapping and exacerbations.

In asthma patients

- LABA should never be used alone because they do not treat the underlying chronic inflammation; rather, LABA should always be used in combination with ICS (preferably in a fixed-dose combination inhaler). LABA are an effective add-on-therapy to ICS and are more effective than increasing the dose of ICS when asthma is not controlled at low doses
- Formoterol is full agonist so is more rapid acting, whereas Salmeterol is a partial agonist with a slower onset of action.

Thus, B is correct. Ref: GG; Topic: Asthma

225. B. It cannot be used with a nebulizer

Arformoterol:

- It an enantiomer of formoterol
- It has twice the potency of racemic formoterol
- It is FDA-approved for the long-term treatment of bronchoconstriction in patients with COPD, chronic bronchitis and emphysema
- It was the first LABA developed as inhalational therapy for use with a nebulizer.

Thus, B is correct. Ref: GG; Topic: Asthma

226. D. Not suitable for nocturnal asthma

Salmeterol:

- The onset of action of inhaled salmeterol is relatively slow, so it is not suitable monotherapy for acute attacks of bronchospasm
- Salmeterol and Formoterol are the agent of choice for nocturnal asthma in patients who remain symptomatic despite anti-inflammatory agents and other standard management.
- It is metabolized by CYP3A4 to a-hydroxy-Salmeterol, which is eliminated primarily in the feces
- Salmeterol should not be used more than twice daily
- Has the potential to increase heart rate and plasma glucose concentration, to produce tremors, and to decrease plasma K^+ concentration through effects on extra pulmonary B2 receptors.

Thus, D is correct. Ref: GG 13E/P 201; Topic: Asthma

227. A. Formoterol

Formoterol is full agonist so is more rapid acting whereas salmeterol is a partial agonist with a slower onset of action.

Thus, A is correct. Ref: GG; Topic: Asthma

228. B. Ipratropium bromide

Inhaled β_2 agonists are the agents of choice for termination of acute attack of bronchial asthma. However, as the patient is receiving β-blockers, treatment with β_2 agonists will be ineffective (receptors are already blocked). Therefore, other bronchodilators like anticholinergic agents (ipratropium) or methybcanthines (theophylline) will be useful in such a case.

Thus, B is correct. Ref: KDT, Topic: Asthma

229. A. Formoterol

- Terbutaline is a fast-acting bronchodilator useful for terminating the acute attack of bronchial asthma. Due to short duration of action, it is not suitable for chronic prophylaxis.
- Bambuterol, salmeterol and formoterol are long acting 132 agonists useful for chronic prophylaxis.
- Bambuterol and salmeterol are delayed acting, therefore are not suitable for acute attacks.
- Formoterol is fast acting also, therefore can be used for the treatment of acute attack of asthma.

Thus, A is correct. Ref: KDT, Topic: Asthma

230. D. Bronchial asthma

Omalizumab is a monoclonal antibody against IgE. It is useful for the management of bronchial asthma.

Thus, D is correct. Ref: KDT, Topic: Asthma

231. D. Oropharyngeal candidiasis

Most common adverse effect of inhaled corticosteroids is oropharyngeal candidiasis. Pituitary adrenal suppression is less likely with inhalational route of corticosteroids than with oral route.

Thus, D is correct. Ref: KDT, Topic: Asthma

232. A. Produce slower response-in bronchial asthma

- Anticholinergic drugs like ipratropium and tiotropium produce slower response in bronchial asthma.
- Anticholinergic drugs are more effective in COPD than bronchial asthma.

Thus, A is correct. Ref: KDT, Topic: Asthma

233. C. Theophylline

Budesonide nebules can be mixed with **terbutaline**, salbutamol and **ipratropium**

Thus, C is correct. Ref: KDT, Topic: Asthma

234. D. Smokers

Smokers taking theophylline generally tend to require higher doses than non-smokers as tobacco smoke contains polycyclic hydrocarbons, which induce CYP1A2. Smoking cessation will therefore result in an increase in serum theophylline concentrations, and possibly toxicity, if the dose is not reduced.

Thus, D is correct. Ref: KDT, Topic: Asthma

235. D. Its use in asthma has declined because of narrow safety margin

Children are fast metabolizers of theophylline as compared to neonates and elderly, assuming adult are normal metabolizers. Theophylline dose needs to be increased in smokers. It acts by non selective PDE enzyme inhibition

Thus, D is correct. Ref: KDT, Topic: Asthma

236. D. Restore steroid responsiveness in COPD patients

All are correct molecular mechanisms of anti-inflammatory action of Theophylline.

Thus, D is correct. Ref: KDT, Topic: Asthma

237. D. Indacaterol

It needs to be taken only once a day, unlike the related drugs formoterol and salmeterol. It is licensed only for the treatment of chronic obstructive pulmonary disease (COPD) (long-term data in patients with asthma are thus far lacking). It is delivered as an aerosol formulation through a dry powder inhaler.

Thus, D is correct. Ref: KDT, Topic: Asthma

238. Raju, a 30-year-old male presents to the OPD with sudden onset pain, swelling and redness of the left first metatarsophalangeal joint. A needle aspirate of the joint shows needle-shaped, negatively birefringent crystals. The physician prescribed a drug for the patient, but he came back next day with nausea, vomiting and diarrhea after taking the medication. Which of the following is the most likely drug that was prescribed to this patient?

A. Allopurinol
B. Steroids
C. Indomethacin
D. Colchicine

239. Desmopressin can be given by following routes except

A. Transdermal
B. Intranasal
C. Sublingual
D. Inhalation through metered-dose nasal inhaler

240. All are true except

A. Terlipressin is better than desmopressin for esophageal variceal bleeding
B. Desmopressin used for both pituitary and renal diabetes insipidus
C. Desmopressin not much effective against Nephrogenic diabetes insipidus
D. Amiloride used for lithium induced diabetes insipidus

241. One of the health benefit of the use of combined oral contraceptives in pre-menopausal women is that the Be contraceptives reduce the risk of

A. Ovarian cancer
B. Migraine
C. Deep vein thrombosis
D. Ischemic stroke

242. The combined estrogen-progestin oral

A. Production of cervical mucus ho
B. Making endometrium unsuitable for implantation
C. Suppression of FSH and LH release
D. Enhancing uterine contraction to dislodge the fertilized ovum

243. Clomiphene citrate is not known to produce which of the following effects in a young female of 30 years of age (child bearing aw group)?

A. Decreased FSH and LH secretion
B. Ovulation
C. Hot flushes
D. Polycystic ovaries

244. Dr. Neelam decides to give estrogen therapy in a postmenopausal woman. The risk of which of the following will not be increased?

A. Gall stones
B. Breast cancer
C. Endometrial carcinoma
D. Osteoporosis

245. An endocrinologist decided to give a 7-year-old boy testosterone therapy and continued it till puberty. The therapy is likely to

A. Increase adult stature
B. Cause hypertrophy of penis
C. Have no effect on adult stature
D. Reduce adult statue

246. The enzyme 5a reductase mediated conversion of testosterone to dihydrotestosterone is NOT required for which of the following actions?

A. Spermatogenesis
B. Prostatic hypertrophy in elderly males
C. Pubertal changes in the male adolescent
D. Formation of male external genitalia in the fetus

238. d	239. a	240. b	241. a	242. c	243. a	244. d	245. d	246. a

247. A patient Geeta began taking alendronate and she was advised to large amount of water and remain in the standing position for at least half an hour till she had the first meal of the day. These instructions were given to reduce the risk of

A. Erosive esophagitis
B. Constipation
C. Cholelithiasis
D. Osteonecrosis

248. All of these drugs can be used in the treatment of post-menopausal osteoporosis EXCEPT

A. Thyroxine B. Teriparatide
C. Calcium D. Alendronate

249. The unique property of SERMs is that they

A. Have both estrogenic and progestational agonistic activity
B. Act as agonist in some tissues and antagonist in other tissues
C. Produces estrogenic effect without binding to estrogen receptors
D. Inhibits the aromatase enzyme that is required for estrogen synthesis

250. A child Mahesh has been diagnosed to be having vitamin D dependent rickets. The most appropriate vitamin D preparation for Mm is

A. Calcitriol
B. Cholecalciferol
C. Calcifediol
D. Calciferol

251. Chronic use of which of the following medications is most likely to cause osteoporosis?

A. Prednisone B. Propanolol
C. Warfarin D. Lovastatin

252. Long term steroid therapy can lead to suppression of hypothalamic pituitary-adrenal axis. It can be overcome by using alternate day therapy with corticosteroids. Which of the following steroids are unsuitable for alternate day therapy for such purpose?

A. Betamethasone
B. Prednisolone
C. Cortisol
D. Hydrocortisone

253. A 50-year-old man with advanced tuberculosis has developed signs of severe acute adrenal insufficiency. The patient should be treated immediately with a combination of

A. Cortisol and fludrocortisone
B. Triamcinolone and dexamethasone
C. Aldosterone and Fludrocortisone
D. Dexamethasone and metyrapone

254. Shanti has been diagnosed to have brain tumor. You would prefer to give her betamethasone/dexamethasone over hydrocortisone as steroids is to decrease her cerebral edema because

A. They can be administered intravenously
B. They are more potent
C. They do not cause Na+ and water retention
D. They inhibit brain tumors

255. A patient Dharampal has been diagnosed to have bronchial asthma and is maintained on oral prednisolone 20 mg daily and inhaled salbutamol as required. The patient develops chest infection. Which of the following measures would you like to take?

A. Stop prednisolone
B. Reduce prednisolone dose to 5 mg/day
C. Substitute prednisolone with inhaled budesonide
D. No change/increase in prednisolone dose

256. Toxic effects of long term administration of a glucocorticoid include

A. Hepatotoxicity
B. Lupus like syndrome
C. Precocious puberty
D. Osteoporosis

247. a	248. a	249. b	250. a	251. a	252. a	253. a	254. c	255. d	256. d

257. In the treatment of congenital adrenal hyperplasia due to lack of 21 B-hydroxylase, the purpose of administration of a synthetic glucocorticoid is

A. Inhibition of aldosterone synthesis
B. Suppression of ACTH secretion
C. Recovery of normal immune function
D. Prevention of hypoglycemia

258. Corticosteroids are used in which of the following disorders is therapy?

A. Peptic ulcer
B. Diabetes mellitus
C. Hyper tension
D. Congenital adrenal hyperplasia

259. Select the regime of corticosteroids which has the maximum adverse effect potential?

A. Methyl-prednisolone 1000 mg Intravenous twice single dose
B. Prednisolone 60 mg/day oral for 7 days
C. Dexamethasone 4 mg intravenous
D. Prednisolone 20 mg/day oral for one year

260. Hydrocortisone acts as an anti-inflammatory agent because of induction of the synthesis of which of the following protein?

A. Heat shock protein 90
B. Lipocortin
C. Transcortin
D. Inhibin

261. Aldosterone is known to cause sodium retention. Its Na^+ retaining action is exerted on which part of the nephron?

A. Collecting ducts
B. Ascending limb of loop of Henle
C. Proximal convoluted tubule
D. Early distal convoluted tubule

262. A 54-year-old obese patient with type 2 diabetes mellitus and a history of alcohol is in probably should not receive metformin because it can increase the risk of

A. Lactic acidosis
B. Hypoglycemia
C. Disulfiram like reaction
D. Severe hepatic toxicity

263. A 15-year-old girl with type I diabetes is brought to emergency complaining of dizziness. Laboratory findings include severe hyperglycemia, ketoacidosis and blood pH of 7. 15. To achieve rapid control of severe ketoacidosis, appropriate drug is

A. Tolbutamide
B. NPH insulin
C. Crystalline zinc insulin
D. Ultra Lente insulin

264. Which of the following drugs is most likely to cause hypoglycemia when used as a monotherapy in the treatment of type 2 diabetes?

A. Acarbose
B. Rosiglitazone
C. Metformin
D. Glipizide

265. The correct statement regarding the present status of oral hypoglycemic in diabetes mellitus is

A. They are used first in most cases of uncomplicated mild to moderate type 2 diabetes
B. They should be prescribed only if the patient refuse insulin injections
C. They are used in type 1 diabetes mellitus
D. They are the first choice drug in all cases

266. Which of the Following statements about Nateglinide is TRUE?

A. It is a long acting oral hypoglycemic drug
B. It acts by opening K · channels in myocytes and adipocytes
C. It lowers blood glucose in both type 1 and type 2 diabetes mellitus
D. Taken just before a meal, it limits post prandial hyperglycemia in type 2 diabetes mellitus

257. b	258. d	259. d	260. b	261. a	262. a	263. c	264. d	265. a	266. d

267. Metformin is NOT effective in lowering of blood sugar level in which of the following patients?

A. Type 2 Diabetics
B. Obese diabetic
C. Non diabetics
D. Diabetics not responding to sulfonylureas

268. Glibenclamide reduces blood glucose in a11 of the following EXCEPT

A. Non diabetics
B. Obese diabetics
C. Type 2 diabetics
D. Type 1 diabetics

269. Which of the following characteristics make metformin a preferred biguanide than phenomenon?

A. It is more potent
B. It does not interfere with vitamin B, 2 absorption
C. It is less liable to cause lactic acidosis
D. It is not contraindicated in patients with kidney disease

270. Glipizide differs from Chlorpropamide in that it.

A. Does not lower blood sugar in non-diabetic subjects
B. Is longer acting
C. Is more potent
D. Is less prone to cause hypoglycemic reaction

271. Human insulin as compared to pork/beef insulin is

A. More potent
B. More antigenic
C. Longer acting
D. Rapidly absorbed

272. Inulin acts by stimulation of

A. Enzymatic receptor
B. Ionotropic receptor
C. Metabotropic receptor
D. Nuclear receptor

273. Which of the following patients is most likely to be treated with intravenous glucagon?

A. An old man with severe bradycardia and hypotension resulting from ingestion of overdose of atenolol
B. A middle aged man with type II diabetes who has not taken his regular dose of glipizide for last 4 days
C. A young man who took cocaine and has a blood pressure of 190/110 mm Hg
D. An old woman with lactic acidosis as a complication of severe infection and shock

274. Which of the following drugs is taken during the first part of the meal for the purpose of delaying absorption of dietary carbohydrates?

A. Nateglinide B. Glipizide
C. Acarbose D. Pioglitazone

275. Manish, a patient of hypothyroidism was prescribed thyroxine. Which the following is the most reliable guide for adjustment of thyroxine dose in him?

A. Pulse rale
B. Serum TSH level
C. Scrum thyroxine level
D. Body weight

276. A pregnant female Salma with thyrotoxicosis is planned for Surgery. Before surgery can be done, her gland should be reduced in size and vascularity by administering

A. Iodine ion
B. Propylthiouracil
C. Propanolol
D. Radioactive iodine

277. In the treatment of hypothyroidism, thyroxine is preferred over levothyroxine because thyroxine

A. Has longer Half-life
B. Has higher affinity for thyroid hormone receptors
C. Is faster acting
D. Can be made more easily by recombinant DNA technology

267. c	268. d	269. c	270. c	271. d	272. a	273. a	274. c	275. b	276. b
277. a									

278. I^{31} is the preferred treatment for

A. Elderly patients with ischemic heart disease
B. Young adult with recent onset Graves' disease
C. Children
D. Pregnant women

279. Which of the following drugs inhibit 5'- Deiodinase?

A. Lugol's Iodine
B. Methimazole
C. Propylthiouracil
D. Radioactive iodine

280. Mechanism of action of Propylthiouracil in hyperthyroidism is

A. Inhibition of organification of iodine
B. Inhibition of oxidation of iodine
C. Inhibition of coupling of two DIT residues
D. All of the above

281. Triiodothyronine (T_3) as compared to T_4

A. Is more plasma protein bound
B. Has delayed action
C. Is less potent
D. Is shorter acting

282. The anti-thyroid drug with the most rapid onset of anti-thyroid action is

A. I^{31}
B. Propylthiouracil
C. Methimazole
D. Sodium iodide

283. A 7-year old boy, Manoj underwent successful chemotherapy and cranial radiation for the treatment of acute lymphocytic leukemia. One month after the completion of therapy, the patient presented with excessive thirst and urination plus hypernatremia. Laboratory testing revealed pituitary diabetes insipidus. To correct these problem, thin patient is likely to be treated with

A. Corticotropin
B. hCG
C. Desmopressin
D. Menotropins

284. A 47-year old male, Kishore exhibited signs and symptoms of acromegaly. Radiologic studies showed the presence of a large pituitary tumor. Surgical treatment of the tumor was on partially effective in controlling the disease. At this point, which of the following drugs is most Likely to be used a8 pharmacological therapy

A. Octreotide
B. Leuprolide
C. Desmopressin
D. Somatropin

285. A young female, Rama with amenorrhea, infertility and galactorrhoea was treated with a drug that successfully restored ovulation and menstruation. Before being given the drug, the women was carefully questioned about previous mental health problems, which she did not have. She was advised to take the drug orally, the drug used to treat this patient was probably

A. Leuprolide
B. Desmopressin
C. Human gonadotropin hormone
D. Bromocriptine

286. Which of the following drugs Do Not cause hyper-prolactinemia?

A. Reserpine
B. Haloperidol
C. Bromocriptine
D. Chlorpromazine

287. Important difference between leuprolide and ganirelix is that ganirelix

A. Can be given orally
B. Initially stimulates release of LH and FSFI
C. Must be given in a pulsatile fashion
D. Immediately reduces gonadotropin secretion

278. a	279. c	280. d	281. d	282. d	283. c	284. a	285. d	286. c	287. d

288. All of the following agents are useful in acromegaly EXCEPT

A. Bromocriptine
B. Nafarelin
C. Octreotide
D. Somatostatin

289. The oral diabetic dispensed with black box warning of bladder cancer is

A. Glimepiride B. Pioglitazone
C. Sitagliptin D. Acarbose

290. All of the following is supposed to increase the risk of lactic acidosis in a patient taking metformin except

A. Advanced age
B. Liver dysfunction
C. Renal dysfunction
D. Smoking

291. A specific antidote for sulfonylurea-induced hypoglycemia

A. Glucagon
B. Hydrocortisone
C. Octreotide
D. Adrenaline

292. A patient was diagnosed with diabetic ketoacidosis, but the treating intern gave only insulin rapidly to lower blood glucose. What complication is expected by this

A. Hypernatremia
B. Hypokalemia
C. Hypocalcaemia
D. Hyperuricaemia

293. A DMT2 patient was in a foreign country for a business trip. His doctor had given him insulin U 40 Vial with U-40 insulin syringe. He forgets to take the syringe in a hurry. The country, he visited has only U-100 insulin syringe. His doctor had advised taking 12 units of U-40 insulin in the morning. Now how much divisions in the U-100 Syringe he need to get 12 units

A. 25 B. 30
C. 28 D. 34

294. A small amount of Zinc is added in insulin preparations to improve

A. Affinity
B. Duration of Action
C. Efficacy
D. Rapid Onset

295. Following statements about Lente insulin are true except

A. An intermediate-acting insulin
B. 7:3 mixtures of Ultralite and semilente
C. Large particles in Lente insulin is crystalline and practically soluble in water
D. Also known as Insulin-Zinc suspension

296. False statement about insulin receptor is

A. Consists of two covalently linked heterodimers, each containing a & b subunit
B. A subunit, entirely extracellular recognition site & b subunit that spans the membrane, contains a tyrosine kinase
C. Binding of insulin to a subunit activates the receptor
D. The first proteins to be phosphorylated by the activated receptor tyrosine kinases are the MAP kinase & protein phosphatases

297. Which of the following drug is approved as FDC with empagliflozin recently

A. Sitagliptin
B. Linagliptin
C. Saxagliptin
D. Alogliptin

298. A patient developed a sore throat on treatment with Methimazole after 3 months. What immediate investigation do you recommend?

A. Renal function test
B. Liver function test
C. Throat swab culture
D. Complete blood count

288. b	289. b	290. d	291. c	292. b	293. b	294. b	295. c	296. d	297. b	298. d

299. Both iodothyronine deiodinase type 1 and type 2 is inhibited by
A. Propylthiouracil
B. Amiodarone
C. Propranolol
D. Corticosteroids

300. Drug of choice for Graves' disease is Methimazole for following reasons except
A. Effective when given as a single daily dose
B. Improved patient adherence
C. Has a relatively short plasma half-life, so toxicity is less
D. Less toxic than propylthiouracil

301. In case of hypothyroidism, patient becomes pregnant, a dose of thyroxine needs to
A. Decreased
B. Increased
C. Continue the same dose
D. Doubles

302. Which of the following is incorrect regarding I-thyroxine
A. Should be administered in empty stomach
B. Proton pump inhibitors also reduce I-thyroxine absorption
C. Rifampin INCREASES metabolism of T4
D. Oral bioavailability of I-thyroxine is – 25%Note: Ref: KDT 7E/P 250

303. Thyrotropin alpha is used for
A. Stimulation of radioiodine uptake and thyroglobulin release in patients with thyroid cancer after thyroidectomy
B. Prepare patients for radioiodine ablation of thyroid remnants after thyroidectomy for thyroid cancer
C. Both A & B
D. NONE

304. A drug used in osteoporosis which doesn't act by decreasing bone resorption is
A. Raloxifene
B. Teriparatide
C. Denosumab
D. Alendronate

305. Subcutaneous Calcitonin is used in
A. Osteomalacia
B. Osteoporosis
C. Hypercalcemia
D. Paget's disease

306. Strontium ranelate
A. Increases bone formation
B. Decreases bone resorption
C. Both A & B
D. NONE

307. A drug which is known to cause osteonecrosis on IV administration is
A. Tamoxifen
B. Zolendronate
C. Calcitriol
D. Strontium ranelate

308. Most potent Bisphosphonate among the following is
A. Etidronate B. Pamidronate
C. Alendronate D. Risedronate

309. Following drugs increase bone resorption except
A. Corticosteroids
B. Furosemide
C. Hydrochlorothiazide
D. Hypervitaminosis D

310. Following adverse effects are seen on use of topical corticosteroids except
A. Easy bruising
B. Increased growth of hairs
C. Hypopigmentation
D. Delayed wound healing

311. Following are measures that minimize HPA axis suppression except
A. Use shorter acting steroids
B. Use steroids for the shortest period of time
C. Switch to alternate-day therapy if possible
D. Give the dose divided into three times daily so that peak steroid concentration is reduced

299. b	300. c	301. b	302. d	303. c	304. b	305. d	306. c	307. b	308. d
309. c	310. b	311. d							

312. All of the following statements regarding corticosteroids are correct except

A. Inhibit production of surfactant
B. Increase the concentration of neutrophils in circulation
C. Inhibit function of macrophages
D. Reduce synthesis of prostaglandins

313. Which of the following glucocorticoid has half-life between 12-36 hours

A. Hydrocortisone
B. Betamethasone
C. Prednisolone
D. Cortisol

314. Following adverse effects are seen with the use of mineralocorticoids except

A. Sodium and water retention
B. Oedema
C. The progressive rise in BP
D. Hyperkalemic alkalosis

315. Which of the following GnRH antagonists used for the management of moderate to severe pain associated with endometriosis

A. Cetrorelix
B. Degarelix
C. Elagolix
D. Abarelix

316. MALA D contains

A. Norgestrel 3 mg Ethinylestradiol 30 ug
B. Norgestrel 0.3 mg Ethinylestradiol 50 ug
C. Norgestrel 5 mg Ethinylestradiol 5 0 ug
D. Norgestrel 0.5 mg Ethinylestradiol 30 ug

317. All are emergency contraceptive except

A. Levonorgestrel
B. Ulipristal
C. Desogestrel
D. IUCD

318. Onapriston is

A. SERM
B. Pure progesterone antagonist
C. Anti-estrogen drug
D. Anti-androgen drug

319. Which of the following drugs is used in metastatic breast carcinoma in premenopausal women

A. Fulvestrant B. Raloxifene
C. Tamoxifen D. Clomiphene

320. Which of the following is correct regarding the treatment of infertility with clomiphene

A. To be taken once daily for 5 days starting from the 5th day of the cycle
B. Daily dose needs to be doubled. If 2-3 months of treatment does not result in conception
C. It can be tried up to one year and not more than that
D. All of the above

321. Women receiving estrogen therapy have an increased risk of developing all the following except

A. Hepatoma
B. Endometrial cancer
C. Breast Cancer
D. Carcinoma of gallbladder

322. Identify the wrong match

A. Sildenafil: used in pulmonary hypertension
B. Finasteride: approved in male pattern baldness
C. Goserelin also approved for ovarian cancer
D. Flutamide: used in Hirsutism in females

323. Following are true about 5 alpha-Reductase inhibitors except

A. Block the conversion of testosterone to dihydrotestosterone
B. Impotence is not seen with the use of these drugs
C. Finasteride also is approved for use in the treatment of male pattern baldness
D. Finasteride is an effective as flutamide and the combination of estrogen and cyproterone in the treatment of hirsutism

312. a	313. c	314. d	315. c	316. d	317. c	318. b	319. c	320. d	321. d
322. c	323. b								

324. Which of the following is a steroidal antiandrogen

A. Flutamide
B. Megestrol
C. Bicalutamide
D. None of the above

325. A female was given a higher dose of Methylergometrine for post-partum hemorrhage and continued after that for several days. Mother had very little milk secretion for 1 month. The reason for this is

A. the partial agonistic action of Methylergometrine on 5-HT2 receptors
B. The agonistic action of Methylergometrine on dopamine receptors
C. The partial agonistic action of Methylergometrine on a-adrenergic receptors
D. None of the above

326. All the given drugs are GnRH agonists except

A. Buserelin B. Leuprolide
C. Tesamorelin D. Goserelin

327. The following drug is/are associated with valvar heart disease except

A. Cabergoline
B. Pergolide
C. Both a and b
D. None of the above

328. Which of the following is not a therapeutic indication of Octreotide

A. Acute Stomatitis
B. Carcinoid Syndrome
C. Acromegaly
D. Acute Pancreatitis

329. Octreoscan is used in

A. Diagnostic imaging of gliomas
B. Diagnostic imaging of osteosarcoma
C. Diagnostic imaging of osteoid osteoma
D. Diagnostic imaging of pituitary adenomas

330. Tesamorelin is used in

A. Prolactinoma
B. Pituitary dwarfism
C. Gigantism
D. HIV-associated lipodystrophy

331. Following statements are true about Exenatide except

A. Can cause hypoglycemia
B. It is a GLP-1 agonist
C. Do not promote weight gain
D. Suppress glucagon

332. Which of the following is incorrect ABOUT PRAMLINTIDE

A. The most common adverse effect is nausea
B. Administered as a subcutaneous injection prior to meals
C. Approved for treatment of types 1 and 2 diabetes
D. Pramlintide can be given in patients with gastroparesis

333. The oral diabetic dispensed with black box warning of bladder cancer is

A. Glimepiride B. Pioglitazone
C. Sitagliptin D. Acarbose

334. A 62-year-old female, Phoolwati presents to the emergency with acute severe low back pain after too quickly sitting down onto a chair. She has a history of rheumatoid arthritis and bronchial asthma. She reports that the was on many medications for several years. X-ray shows a fracture of the fifth lumbar vertebra. Which of the following drugs are likely responsible for the patient's complaints?

A. Methotrexate
B. Salbutamol
C. Indomethacin
D. Prednisolone

335. All of the following agents act through nuclear receptors EXCEPT

A. Prednisolone
B. Rosiglitazone
C. Thyroxine
D. Estrogen

324. b	325. b	326. c	327. c	328. a	329. b	330. d	331. b	332. d	333. b
334. d	325. a								

336. Teriparatide can be used for the treatment of

A. Polycystic ovarian disease
B. Hormone responsive breast carcinoma
C. Osteoporosis
D. Hyperparathyroidism

337. Exenatide is a newer drug proposed to be used in the treatment of

A. Osteoporosis
B. Hyperparathyroidism
C. Diabetes mellitus
D. Anovulatory infertility

338. Which of the following is an adrenergic drug preferred for arresting labour?

A. Salbutamol
B. Isoprenaline
C. Ritodrine
D. Terbutaline

339. A patient parul gives you the history that the has missed a single dose of her combined oral contraceptive pill. Which of the following will you advise her?

A. Continue with the course without regard to the missed dose
B. Discontinue the course and use alternative method of contraception
C. Take 2 pills every day for the remaining part of the course
D. Take 2 pills the next day and continue with the course

340. A young female Shagun comes to you in the gynaecology OPD and gives the history that she had intercourse with her boyfriend 5 hours back Select the drug that can act as a single dose postcoital contraceptive for her

A. Clomiphene citrate
B. Danazol
C. Mifepristone
D. Medroxyprogesterone acetate

341. Dr. Shweta decided to add a progestin for 10-12 days each month to estrogen replacement therapy in menopausal women in the gynecology OPD. Addition of progestin is recommended because the progestin

A. Blocks the increased risk of myocardial infarction due to estrogen
B. Enhances the metabolic benefits of estrogen treatment
C. Reverses vulval atrophy occurring in post-menopausal women
D. Blocks the increased risk of endometrial carcinoma due to estrogen

342. A drug 'X' primarily reduces the static component of urinary obstruction in benign hypertrophy of prostate and takes more than 3 months to exert its beneficial effect. Which of the following is 'X'?

A. Finasteride
B. Terazosin
C. Tamsulosin
D. Amphetamine

336. c	337. c	338. c	339. d	340. c	341. d	342. a

238. D. Colchicine

This patient's acute onset pain and swelling of the right first metatarsophalangeal joint and joint aspirate showing needle-shaped negatively birefringent crystals indicate that he most likely has acute gouty arthritis. Colchicine is an effective anti-inflammatory agent in acute gouty arthritis but commonly result in nausea, vomiting, diarrhea and myopathy as adverse effects.

Thus, option D is correct. Topic Gout

239. A. Transdermal

Desmopressin acetate routes of administration:

- Intranasally every 12-24 hours as needed for thirst and polyuria and central DI
- Can be administered via metered-dose nasal inhaler containing 0.1 mL (10 mcg/spray) or via a calibrated rhinal tube
- Oral desmopressin, 0.1- and 0.2 mg tablets, is given in a starting dose of 0.005 mg twice daily
- Sublingual desmopressin
- Can be given also via intravenously, intramuscularly, or subcutaneously

Thus, option A is correct. Ref: CMDT: Nocturnal enuresis

240. B. Desmopressin used for both pituitary and renal diabetes insipidus

Desmopressin:

- DI of pituitary (neurogenic) is the most important indication for vasopressin. It is ineffective in renal (nephrogenic) DI. Since kidney is unresponsive to ADH.
- Desmopressin is a drug of choice for central diabetes insipidus and not much effective against nephrogenic diabetes insipidus
- It can be used by intranasal route and oral route
- Used in nocturnal enuresis in children and also in hemophilia and von Willebrand's Disease

In case of esophageal variceal bleeding:

- Terlipressin is a synthetic analogue of vasopressin with longer activity and fewer side effects. It reduces portal pressure and its effects are still significant 4 hours after administration. So used in esophageal variceal bleeding
- Desmopressin (DDAVP), a drug that significantly decrease bleeding time in cirrhosis, has shown no clinical benefits in the setting of variceal bleeding.

In case of lithium induced diabetes insipidus:

- Amiloride is the drug of choice: It blocks entry of Li+ through Na+ channels in the CD cells and mitigates diabetes insipidus induced by lithium
- So among, the options: Desmopressin used for both pituitary and renal diabetes insipidus is a false statement, so it is the option you need to choose.

Thus, option B is correct. Ref: KD Tripathi, Topic: Diabetes insipidus

241. A. Ovarian cancer

Oral contraceptives contain estrogens and these can lead to more chances of migraine and thromboembolism but because of progesterone component the chances of ovarian and endometrial carcinoma decrease.

Thus, option A is correct. Ref: KDT, Topic: OCPs

242. C. Suppression of FSH and LH release

- Oral contraceptive pills act by several mechanisms, most important of which is the inhibition of ovulation due to suppression of LH and FSH.

- Other mechanisms include disruption of proliferative and secretory phases of endometrium and increase in viscosity of cervical mucus.

Thus, option C is correct. Ref: KDT, Topic: OCPs

243. A. Decreased FSH and LH secretion

- Clomiphene citrate is an antagonist of estrogen in the peripheral tissues. Due to this property, it can cause hot flushes.
- Due to decreased action of estrogen, feedback pituitary inhibition is blunted resulting in increased secretion of LH and FSH.
- It can cause polycystic ovaries and multiple pregnancy (hyper stimulation syndrome).

Thus, option A is correct. Ref: KDT, Topic: SERMs

244. D. Osteoporosis

Estrogen is used for the treatment of osteoporosis in post-menopausal female.

Thus, option D is correct. Ref: KDT, Topic: Hormone replacement therapy

245. D. Reduce adult statue

Testosterone causes fusion of epiphyses and can result in reduction of adult stature

Thus, option D is correct. Ref: KDT, Topic: Sex hormones

246. A. Spermatogenesis

Testosterone [not DHT] is required for
F—Feedback inhabitation of LH secretion
I—Internal genitilia development
S—Spermatogenesis
H—Hematopoiesis

Thus, option A is correct. Ref: KDT, Topic: Sex hormones

247. A. Erosive esophagitis

Bisphosphonates (alendronate, risedronate etc.) are used for the prophylaxis and treatment of osteoporosis. Esophageal toxicity is their distinct adverse effect.

Thus, option A is correct. Ref: KDT, Topic: osteoporosis

248. A. Thyroxine

Thyroid hormones and glucocorticoids increase the risk of osteoporosis whereas other drugs mentioned in the options are used to treat osteoporosis.

Thus, option A is correct. Ref: KDT, Topic: drugs acting on Thyroid gland

249. B. Act as agonist in some tissues and antagonist in other tissues

SERMs are drugs with agonistic action on estrogen receptors in some tissues and antagonistic action in other tissues, e.g. Tamoxifen, raloxifene

Thus, option B is correct. Ref: KDT, Topic: SERMs

250. A. Calcitriol

More active vitamin D preparation is Calcitriol

Thus, option A is correct. Ref: KDT, Topic: osteoporosis

251. A. Prednisone

Steroids result in osteoporosis on long term use

Thus, option A is correct. Ref: KDT, Topic: Steroids

252. A. Betamethasone

Steroids with long half-life like Betamethasone and dexamethasone cannot be used for alternate day therapy because even in alternate day therapy there will be sufficient blood levels of these steroids to cause suppression of HPA axis.

Thus, option A is correct. Ref: KDT, Topic: Steroids

253. A. Cortisol and fludrocortisone

Patient should be given both mineralocorticoids as well as glucocorticoid

Max. mineralocorticoid activity – Aldosterone

Max. glucocorticoid activity – Dexamethasone

Thus, option A is correct. Ref: KDT, Topic: Steroids

254. C. They do not cause Na+ and water retention

- Triamcinolone, Betamethasone,

Dexamethasone and Paramethasone are selective glucocorticoids (have zero mineralocorticoid action).

- These are preferred for cerebral edema because they lack salt and water retaining potential mineralocorticoid action.

Thus, option C is correct. Ref: KDT, Topic: Steroids

255. D. No change/increase in prednisolone dose

During conditions of stress or injection, dose of steroids should not be decreased. Rather, increase in dose may be required

Thus, option D is correct. Ref: KDT, Topic: Steroids

256. D. Osteoporosis

Glucocorticoids have lot of adverse effects on long term use. These can lead to Cushing syndrome, hyperglycemia, osteoporosis, delayed wound healing, increased susceptibility to infections, cataract, glaucoma and many other adverse effects.

Thus, option D is correct. Ref: KDT, Topic: Steroids

257. B. Suppression of ACTH secretion

In congenital adrenal hyperplasia, due to decreased formation of steroids, there is decreased feedback inhibition of ACTH. Thus more ACTH is formed which leads to adrenal hyperplasia. Thus exogenous steroids are given to suppress ACTH secretion.

Thus, option B is correct. Ref: KDT, Topic: Steroids

258. D. Congenital adrenal hyperplasia

- Corticosteroids are used for the management of congenital adrenal hyperplasia.
- Corticosteroids can result in hyperglycemia and thus may vitigate the control of blood glucose in diabetics.
- Due to retention of Na+ and water, corticosteroids can worsen the hypertension.
- By inhibiting the production of gastro protective prostaglandins, corticosteroids increase the risk of peptic ulcer disease.

Thus, option D is correct. Ref: KDT, Topic: Steroids

259. D. Prednisolone 20 mg/day oral for one year

If used for more than two weeks, corticosteroids can lead to HPA-axis suppression. If discontinued abruptly, precipitation of acute adrenal insufficiency can result. This is the most serious adverse effect seen with the use of corticosteroids that can cause death of the patient.

Thus, option D is correct. Ref: KDT, Topic: Steroids

260. B. Lipocortin

Corticosteroids induce the synthesis of lipocortins that inhibit the enzyme phospholipase A2.

Thus, option B is correct. Ref: KDT, Topic: Steroids

261. A. Collecting ducts

Aldosterone is the principal mineralocorticoid. It stimulates the reabsorption of Na^+ and excretion of K^+ and H^+ by its action on late distal tubules and collecting ducts.

Thus, option A is correct. Ref: Katzung 14E/P 240 Topic : Steroids

262. A. Lactic acidosis

Biguanides like metformin and phenformin increase the risk of lactic acidosis particularly in the patients with hepatic or renal disease. Both these drugs can cause lactic acidosis although phenformin has more potential to cause this adverse effect than metformin. Metformin is more likely to cause megaloblastic anemia than phenformin.

Thus, option A is correct. Ref: KDT, Topic: Diabetes

263. C. Crystalline zinc insulin

- Diabetic ketoacidosis must be managed by fast acting insulin preparations like
- Regular insulin [crystalline zinc insulin]
- Insulin lispro

- Insulin aspart

Thus, option C is correct. Ref: KDT, Topic: Diabetes

264. D. Glipizide

Hypoglycemia is caused by the drugs that cause release of insulin. Two group of such drugs are sulfonylureas (like chlorpropamide, glipizide etc.) and meglitinides (e.g. Repaglinide)

Thus, option D is correct. Ref: KDT, Topic: Diabetes

265. A. They are used first in most cases of uncomplicated mild to moderate type 2 diabetes

Thus, option A is correct. Ref: KDT, Topic: Diabetes

266. D. Taken just before a meal, it limits post prandial hyperglycemia in type 2 diabetes mellitus

- Nateglinide and repaglinide are short acting oral hypoglycemic agents.
- These are used to limit the post-prandial hyperglycemia.
- Like sulfonylureas, these drugs also act by blocking K4 channels in the 0-cells of pancreas that lead to depolarization and release of insulin.

Thus, option D is correct. Ref: KDT, Topic: Diabetes

267. C. Non diabetics

- Metformin is the drug of choice for the treatment of obese diabetic patients, as it causes weight loss.
- It does not cause release of insulin, therefore less chances of hypoglycemia.

Thus, option C is correct. Ref: KDT, Topic: Diabetes

268. D. Type 1 diabetics

- Sulfonylureas decrease blood glucose in diabetics as well as non-diabetics.
- It requires at least 30% of functional beta cells for their action.
- Insulin is the only treatment for type 1 diabetes.

Thus, option D is correct. Ref: KDT, Topic: Diabetes

269. C. It is less liable to cause lactic acidosis

Incidence of lactic acidosis is more with phenformin and that of megaloblastic anemia (due to interference with vitamin B12 absorption) is more with metformin.

Thus, option C is correct. Ref: KDT, Topic: Diabetes

270. C. Is more potent

- Second generation (like glipizide) sulfonylureas are more potent than first generation agents (like chlorpropamide).
- Chlorpropamide is the longest acting sulfonylurea.
- Sulfonylureas can cause hypoglycemia (even in non-diabetics) due to release of insulin.

Thus, option C is correct. Ref: KDT, Topic: Diabetes

271. D. Rapidly absorbed

Homan insulin has rapid absorption and shorter duration of action than pork or beef insulin.

Thus, option D is correct. Ref: KDT, Topic: Diabetes

272. A. Enzymatic receptor

Insulin acts by stimulation of tyrosine kinase receptors.

Thus, option A is correct. Ref: KDT, Topic: Diabetes

273. A. An old man with severe bradycardia and hypotension resulting from ingestion of overdose of atenolol

- Glucagon is the antidote of 0-blocker poisoning. It acts by increasing cAMP in the heart via stimulation of glucagon receptors. Cyclic AMP stimulatm the heart
- Calcium gluconate can also be used for the treatment of B-blocker poisoning

Thus, option A is correct. Ref: KDT, Topic: Diabetes

274. C. Acarbose

- It is an alpha-glucosidase inhibitor.

- It inhibits the breakdown of complex carbohydrates to simple carbohydrates and thus decreases their absorption.

Thus, option C is correct. Ref: KDT, Topic: Diabetes

275. B. Serum TSH level

- TSH levels are elevated in a hypothyroid patient (because feedback inhibition by thyroid hormones is not present).
- Administration of thyroid hormones (T_3 and T_4) decreases TSH by contributing to feedback inhibition.
- If TSH levels are less than normal, it signifies overtreatment whereas high TSH level suggests inadequate treatment.

Thus, option B is correct. Topic : Drugs acting on thyroid gland

276. B. Propylthiouracil

- Iodides are commonly used to decrease the size and vascularity of thyroid gland before surgery.
- As this patient is pregnant, iodides and radioactive iodine is contra-indicated
- Propylthiouracil is safe in pregnancy and is used for this purpose.

Thus, option B is correct. Ref: KDT, Topic: Drugs acting on thyroid gland

277. A. Has longer Half-life

Liothyronine (T3) as compared to thyroxine (T4) is:

- Fast acting
- More potent
- Short half life

Indication of Liothyronine includes myxedema coma and for most of the indications thyroxine is used because it has a long half-life thus can be used less frequently than T3.

Thus, option A is correct. Ref: KDT, Topic: Drugs acting on thyroid gland

278. A. Elderly patients with ischemic heart disease

- 1^{131} is contra-indicated in children and young adults because if hypothyroidism develops in response to radioactive iodine, it is permanent.
- Use of radioactive iodine is contra-indicated in pregnancy.
- In ischemic heart disease patients, surgery should be avoided. I^{131} therapy is a good alternative in such patients.

Thus, option A is correct. Ref: KDT, Topic: Drugs acting on thyroid gland

279. C. Propylthiouracil

For the peripheral conversion of T4 to T3, the enzyme needed is 5'-deiodinase. It is inhibited by

- Propylthiouracil
- Propanolol
- Amiodarone

Thus, option C is correct. Ref: KDT, Topic: Drugs acting on thyroid gland

280. D. All of the above

Propylthiouracil, Carbimazole and Methimazole act by inhibiting the enzyme, thyroid peroxidase. It catalysis:

- Oxidation of iodine
- Organification
- Coupling

Thus, option D is correct. Ref: KDT, Topic: Drugs acting on thyroid gland

281. D. Is shorter acting

- T_3 is the main active thyroid hormone. It is more potent (less plasma protein bound) and faster acting than T_4. However, short duration of action limits its use for the treatment of hypothyroidism (requires lifelong treatment).
- T_3 is indicated for the treatment of myxedema coma.

Thus, option D is correct. Ref: KDT, Topic: Drugs acting on thyroid gland

282. D. Sodium iodide

- Iodides inhibit the secretion of thyroid hormones in the circulation and therefore are the fastest acting ant thyroid drugs.
- Thyroid peroxidase inhibitors are delayed acting because their action

manifests only when already stored pool of thyroid hormones is utilized.
- I^{131} takes more than 3 weeks to manifest their action.

Thus, option D is correct. Ref: KDT, Topic: Drugs acting on thyroid gland

283. C. Desmopressin

Drugs used for the treatment of central (pituitary) diabetes insipidus are:
- Desmopressin (selective V2 agonist)
- Thiazides
- Chlorpropamide
- Carbamazepine

Drugs used for the treatment of nephrogenic (renal) diabetes insipidus are:
Thiazides
- Amiloride (for lithium induced)
- Thiazides are useful for the treatment of both central as well as nephrogenic diabetes insipidus.
- Desmopressin is not effective in nephrogenic diabetes insipidus.

Thus, option C is correct. Ref: KDT, Topic: **diabetes insipidus**

284. A. Octreotide

Drugs useful in acromegaly are:
- Bromocriptine and cabergoline
- Somatostatin
- Octreotide (long acting somatostatin analogue)
- Pegvisomant (growth hormone receptor antagonist)

Thus, option A is correct. Ref: KDT, Topic: Pituitary hormones

285. D. Bromocriptine

- Symptoms of the patient (amenorrhea, galactorrhoea and infertility) points towards the diagnosis of hyperprolactinemia.
- Bromocriptine is a D2 receptor agonist that can be used in the treatment of hyperprolactinemia (dopamine acts as prolactin release inhibiting hormone in the hypothalamus).
- Psychosis occurs due to excessive stimulation of D2 receptors (D, blockers are used as typical antipsychotic drugs) and bromocriptine can precipitate the symptoms in predisposed patients.

Thus, option D is correct. Ref: KDT, Topic: Pituitary hormones

286. C. Bromocriptine

Hyperprolactinemia is caused by D2 blockers. All the drugs listed are D2 blockers except bromocriptine which is a D2 receptor agonist. It is used in the treatment of hyperprolactinemia.

Thus, option C is correct. Ref: KDT, Topic: Pituitary hormones

287. D. Immediately reduces gonadotropin secretion

- GnRH agonists like leuprolide, goserelin and Nafarelin etc. are used by parenteral route. Continuous administration of these agents decreases gonadotropin secretion whereas pulsatile administration increases the secretion. When used continuously even then first few doses cause increased secretion of gonadotropins (LH and FSH) leading to flare up reaction in prostatic carcinoma.
- GnRH antagonists like cetrorelix and ganirelix are also used by parenteral route but these drugs immediately reduce gonadotropin secretion.

Thus, option D is correct. Ref: KDT, Topic: Pituitary hormones

288. B. Nafarelin

Nafarelin is a GnRH agonist. It has no role in acromegaly.

Thus, option B is correct. Ref: KDT, Topic: Pituitary hormones

289. B. Pioglitazone

Pioglitazone

Preclinical and clinical trial data, and results from an observational study suggest an increased risk of bladder cancer in Pioglitazone users. The observational data further suggest that the risk increases with duration of the age
- Do not use in patients with active bladder cancer

- Use caution when using in patients with a prior history of bladder cancer.

Thus, option B is correct.

290. D. Smoking

The risk of lactic acidosis in a patient taking metformin:

- Advanced age (because of age-related decline in renal function and increased risk for acute renal failure and other catastrophic medical conditions
- Impaired lactate removal (in liver damage, which inhibits gluconeogenesis)
- Increase the risk of lactic acidosis include severe dehydration, shock, alcohol use, hypoxic states, sepsis and advanced age.
- Metformin plasma levels > 5 ug/ml are generally found when metformin is implicated as the cause of lactic acidosis
- Such sustained very high elevations in plasma metformin concentrations usually are observed in individuals with
- Poor renal function (i.e., reduced metformin clearance)
- Impaired hepatic metabolism (i.e., reduced lactate clearance)
- And/or in the presence of increased production (i.e., sepsis, CHF, reduced

Thus, option D is correct. Ref: GG, Topic : Diabetes

291. C. Octreotide

A specific antidote for sulfonylurea-induced hypoglycemia

- Octreotide
- Suppress insulin release from beta islet cells, can act as a specific sulfonylurea antidote
- Can be administered either subcutaneously or intravenously to patients exhibiting hypoglycemia following sulfonylurea poisoning

Thus, option C is correct. Ref: GG, Topic : Diabetes

292. B. Hypokalemia

In diabetic ketoacidosis

- Up to 400 mEq of K+ may be lost in urine during ketoacidosis,
- Serum K+ is usually normal due to exchange with intercellular stores
- When insulin therapy is instituted ketosis subsides
- K+ is driven back intracellularly leading to dangerous hypokalemia
- After 4 hours it is appropriate to add 10-20 mEq/hr KCI to the i.v. fluid
- The further rate of infusion is guided by serum K+ measurements and ECG

Thus, option B is correct. Ref: KDT, Topic: Diabetes

293. B. 30

- U-40 VIAL contains 40 units of insulin
- U-100 vials contain 100 units of insulin
- 1ml contains 40 units of U40 syringe
- So, 40 units in U 40 syringe = 100 units in U 100 syringe
- You need to give 12 units of U 40 in U 100 syringe. So, 12 divisions in U 40= 100/40x12=
- 30 divisions in U 100 syringe
- Simply, remember when you want to give U 40 insulin from U 100 syringe multiple by 2.5
- When you want to give U 40 insulin from U 40 syringe multiply by 0.4

Thus, option B is correct. Ref: KDT, Topic: Diabetes

294. B. Duration of Action

Insulin:

- Insulin is a short-acting, to make it long-acting
- Insulin molecules are made to form self-aggregate hexamers around zinc ions.
- After injection, insulin monomers are released gradually by dilution, so that absorption occurs slowly
- Peak action is produced only after 2-3 hours and action continues up to 6-8 hours

Thus, option B is correct. Ref: KDT, Topic: Diabetes

295. C. Large particles in Lente insulin is crystalline and practically soluble in water

Lente Insulin

- Intermediate-acting insulin
- 7:3 mixtures of ultralente (crystalline) and semilente (amorphous)
- Large particles in Lente insulin are crystalline and practically insoluble in water
- Also known as Insulin-Zinc suspension

Thus, option C is correct. Ref: KDT, Topic: Diabetes

296. D. The first proteins to be phosphorylated by the activated receptor tyrosine kinases are the MAP kinase & protein phosphatases

Insulin Receptor:

- Are tyrosine kinase receptors
- Consists of two covalently linked heterodimers each containing a & b subunit
- A subunit entirely extracellular, recognition site & b subunit that spans the membrane, contains a tyrosine kinase
- Binding of insulin to a subunit activates the receptor

The first proteins to be phosphorylated receptor activated receptor tyrosine kinases are the docking proteins, insulin **receptor substrate-1**

Thus, option D is correct. Ref: KAT, Topic: Diabetes

297. B. Linagliptin

Linagliptin is approved as FDC with empagliflozin recently.

Thus, option B is correct.

298. D. Complete blood count

Methimazole:

- Agranulocytosis usually occurs during the first few weeks or months of therapy but may occur later.
- Because agranulocytosis can develop rapidly periodic white cell counts usually are of little help, although a baseline white blood cell count and differential should be obtained before antithyroid drug treatment is initiated
- Patients should be instructed to immediately report the development of a sore throat or fever, which are often signs of the presence of leucopenia
- If these signs or symptoms occur, patients should discontinue their anti-thyroid drug and obtain a granulocyte count
- Agranulocytosis is reversible upon discontinuation of the offending drug
- Administration of recombinant human granulocyte colony-stimulating factor may hasten recovery

299. B. Amiodarone

Iodothyronine deiodinase (D) which exists in 3 forms

- D1
- D2
- D3

These forms differ in their organ and cellular localization, as well as product, formed.

- (type 1) D1 form generates both T3 and Rt4
- Type 2 deiodinase (D2) generates T3
- D3 generates reverse T3
- Propylthiouracil inhibits Type 1 deiodinase
- Amiodarone inhibits both D1 and D2 forms
- Propranolol (high dose) and glucocorticosteroids also inhibit peripheral conversion of T4 and T3 (except in brain and in pituitary)

Thus, option B is correct. Ref: KDT, Topic: thyroid

300. C. Has a relatively short plasma half-life, so toxicity is less

Drug of choice for **Graves' disease** is **Methimazole** because

Methimazole

- Effective when given as a single daily dose
- Improved patient adherence

- less toxic than propylthiouracil
- has a relatively long plasma and intrathyroidal t1/2
- the long duration of action
- the usual starting dose for Methimazole is 15-40 mg per day

Thus, option C is correct. Ref: GG, Topic: thyroid

301. B. Increased

Hypothyroidism and Pregnancy

- Due to the increased serum concentration of TBG induced by estrogen, the expression of D3 by the placenta
- There will be a small amount of transplacental passage of L-T4 from mother to fetus
- Overt hypothyroidism during pregnancy is associated with an increased risk of miscarriage, fetal distress, preterm delivery and impaired psychoneural and motor development in the progeny

Clinical implication:

- As a part of prepregnancy planning, the dose of levothyroxine should be adjusted to maintain the TSH in the lower portion of the reference range. Women should increase their levothyroxine dose by sour 30% as soon as pregnancy is confirmed, thus anticipating the increased need.

Thus, option B is correct. Ref: GG, Topic: thyroid

302. D. Oral bioavailability of I-thyroxine is – 25%Note: Ref: KDT 7E/P 250

I-thyroxine:

- Oral bioavailability of I-thyroxine is – 75
- To be taken in empty stomach to avoid food interaction
- Sucralfate, iron, calcium and proton pump inhibitors also reduce I-thyroxine absorption
- CYP3A3 inducers; ole rifampin, phenytoin and carbamazepine increase metabolism of T4.
- Thus, option D is correct. Ref: GG, Topic: thyroid

303. C. Both A & B

Thyrotropin alpha is used for

- Stimulation of radioiodine uptake and thyroglobulin release in patients with thyroid cancer after thyroidectomy
- Prepare patients for radioiodine ablation of thyroid remnants after thyroidectomy for thyroid cancer.

Thus, option C is correct. Ref: GG, Topic: thyroid

304. B. Teriparatide

Teriparatide

- Is a recombinant PTH 1-34
- PTH, when given in low and pulsatile dose, stimulates bone formation whereas Continuous administration causes resorption of bones
- By intermittent s.c. administration Teriparatide is used in the treatment of osteoporosis
- So it acts by increasing bone formation not by decreasing bone resorption

Thus, option B is correct. Ref: GG, Topic : Osteoprorosis

305. D. Paget's disease

Calcitonin:

- Is effective in disorders of increased skeletal remodelling, such as Paget disease, and in some patients with osteoporosis
- For Paget disease, calcitonin generally is administered by subcutaneous injection because intranasal delivery is relatively ineffective owing to limited bioavailability
- Intranasal route is used in osteoporosis

Thus, option D is correct. Ref: GG, Topic : Osteoporosis

306. C. Both A & B

Oral strontium ranelate:

- Is an alternative oral treatment, belonging to a class of drug called 'dual action bone agents' (DABAs)
- Proven efficacy, especially in the prevention of vertebral fracture.
- Mechanism of action: collagen &

noncollagen protein, synthesis, enhances preosteoblast differentiation, osteoclast function

- Dosage: 2 g oral suspension daily
- Adverse effects: Thromboembolism

Thus, option C is correct. Ref: KDT, Topic: Osteoporosis

307. B. Zolendronate

Zolendronate

- Osteonecrosis of the jaw is a rare complication of i.v. high dose Bisphosphonate therapy.

Thus, option B is correct. Ref: KDT, Topic: Osteoporosis

308. D. Risedronate

Bisphosphonates classification and their relative potency

First generation BPNs

- Etidronate 1
- Tiludronate 10

Second generation BPNs

- Pamidronate 100
- Alendronate 100-500
- Ibandronate 500-1000

Third generation BPNs

- Risedronate 1000
- Zoledronate 5000 (Overall highest potency is zoledronate)

Thus, option D is correct. Ref: KDT, Topic: Osteoporosis

309. C. Hydrochlorothiazide

List of drugs increasing and decreasing bone resorption

Resorpation	Resorpation
Corticosteroids	Androgens/Estrogens
Parathormone	Calcitonin
Thyroxine (excess)	Growth Harmone
Hypervitaminosis D	Bisphosphonates
Prostaglandin E2	Fluoride
Interleukin 1 & 6	Gallium Nitrate
Alcoholism	Mithramycin
Loop diuretics	Thiazide diuretics

Thus, option C is correct. Ref: KDT, Topic: Osteoporosis

310. B. Increased growth of hairs

Adverse effects were seen on use of topical corticosteroids

- Thinning of epidermis
- Dermal changes
- Atrophy Telangiectasia, Striae Easy Bruising Hypopigmentation
- Delayed wound healing
- Fungal and bacterial infections

Thus, option B is correct. Ref: KDT, Topic: steroids

311. D. Give the dose divided into three times daily so that peak steroid concentration is reduced

Measures that minimize HPA axis suppression are:

- Use shorter acting steroids at the lowest possible dose
- Use steroids for the shortest periods of time possible
- Give the entire daily dose at one time in the morning
- A moderate dose of a short-acting steroid (e.g. prednisolone) given a t 48 hr interval did not cause HPA suppression, whereas the same total amount given in 4 divided 12 hourly doses produced marked HPA suppression
- Switch to alternate-day therapy if possible
- Use topical or local steroid preparations wherever possible
- Ex: dermal, inhaled, ocular, nasal, rectal intrasynovial route.

Thus, option D is correct. Ref: KDT, Topic: steroids

312. A. Inhibit production of surfactant

Corticosteroids:

- Increase the number of RBCs, platelets and neutrophils in circulation but decrease the concentration of lymphocytes in circulation
- Inhibit function of macrophages
- Increase production of surfactant, so used in premature infants for lung maturity

- By inhibiting PLA 2 they reduce the synthesis of prostaglandins

Thus, option A is correct. Ref: KDT, Topic: steroids

313. C. Prednisolone

Duration of action	Steroid	Glucocorticoid	Mineralo corticoids activity
Short acting (t ½ < 12 hr)	Hydrocortisone (cortisol)	1	1
Intermediate acting t ½ < 12-36 hr)	Prednisolone	4	0.8
	Prednisone	4	0.8
	Triamcilone	5	0
	Diflazocort	3-4	0
	Methyl Prednisolone	5	0.5
Long acting t ½ < 36 hr)	Beta,ethasone	25	0
	Dexamethasone	25	0

Thus, option C is correct. Ref: KDT, Topic: steroids

314. D. Hyperkalemic alkalosis

Adverse effects are seen with use mineralocorticoids

- Sodium and water retention
- Oedema
- Hypokalemic alkalosis
- The progressive rise in BP
- The gradual rise in BP occurs due to excess glucocorticoid as well

Thus, option D is correct. Ref: KDT, Topic: steroids

315. C. Elagolix

Elagolix:

- GnRH receptor antagonist
- Approved for the management of moderate to severe pain associated with endometriosis

Thus, option C is correct.

316. D. Norgestrel 0.5 mg Ethinylestradiol 30 µg

MALA D contains

- Norgestrel 0.3mg Ethinylestradiol 30 µg

Thus, option D is correct. Ref: KDT, Topic: contraceptives

317. C. Desogestrel

Emergency contraceptives:

- Levonorgestrel
- Emergency (post-coital) contraceptive
- OCPs (estrogen + Progesterone)
- Mifepristone single dose
  - Within 72 hours of intercourse
- Ulipristal
  - Progesterone agonist/antagonist
  - Emergency contraceptive
  - Long-acting contraceptive methods
  - Norplant and DMPA

Thus, option C is correct. Ref: KDT, Topic: contraceptives

318. B. Pure progesterone antagonist

Onapriston:

- Is a pure progesterone antagonist

Mifepristone:

- Is a selective progesterone receptor modulator
- Is not a pure antagonist
- In the presence of progesterone, it acts as a competitive receptor antagonist of progesterone, but in the absence of progesterone it acts as a partial agonist
- Ineffective against mineralocorticoids
- Has no estrogenic side effect
- Has glucocorticoid and androgen receptor blocking action

Thus, option B is correct. Ref: KDT, Topic: contraceptives

319. C. Tamoxifen

Tamoxifen:

- Is the only drug approved for primary as well as metastatic breast carcinoma in premenopausal women
- It is also effective in surgically treated cancer in the male breast

Thus, option C is correct. Ref: KDT, Topic: SERMs

320. D. All of the above

Clomiphene is for infertility due to the failure of ovulation:

- 50 mg once daily for 5 days starting from the 5th day of the cycle
- Treatment is given monthly
- If 2-3 months' treatment does not result in conception, then the daily dose may be doubled for 2-3 months
- No more than 6 treatment cycles should be tried.

Thus, option D is correct. Ref: KDT, Topic: SERMs

321. D. Carcinoma of gallbladder

Women receiving estrogen therapy have an increased risk of developing

- Benign Hepatoma
- Carcinoma of vagina & cervix
- Postmenopausal
- Endometrial cancer
- Premenopausal
- Ca. Breast
- Gall Stones
- Coronary & thrombo-embolic disorders
- Decrease DL & Increase HDL & TG
- Hyperglycemia

Thus, option D is correct. Ref: KDT, Topic: contraceptives

322. C. Goserelin also approved for ovarian cancer

Sildenafil:

- Used in pulmonary hypertension
- Male erectile dysfunction

Finasteride:

- Benign prostatic hyperplasia
- Approved in male pattern baldness

Flutamide:

- Used in Hirsutism in females
- Adjuvant treatment of metastatic prostate
- Cancer

Goserelin

- Approved for breast cancer, dysfunction uterine bleeding and endometriosis

Thus, option C is correct. Ref: GG, Topic : Pituitary hormones

323. B. Impotence is not seen with the use of these drugs

5alpha-Reductase inhibitors:

- 5a-Reductase converts testosterone to dihydrotestosterone
- Finasteride antagonist of 5a-reductase, especially the type II
- Both agents like the conversion of testosterone to dihydrotestosterone, especially in the male external genitalia.

Use:

- Benign prostatic hyperplasia
- Serum and prostatic concentrations of dihydrotestosterone decrease prostatic volume decreases, and urine flow rate increases
- Finasteride also is approved for use in the treatment of male pattern baldness and Hirsutism
- Finasteride is an effective flutamide

and the combination of estrogen and cyproterone in the treatment of Hirsutism

Adverse Effects:

- Impotence is a well-documented, albeit infrequent side effect of this use
- Mechanism unknown
- Gynecomastia is an even less common side effect

Thus, option B is correct. Ref: GG, Topic 5 alpha reductase inhibitors

324. B. Megestrol

Anti-androgen is classified

Steroidal:

- Cyproterone
- Megestrol

Nonsteroidal,

- Flutamide
- Bicalutamide
- Nilutamide

Mechanism of Action of Nonsteroidal Anti-Androgens.

- The nonsteroidal anti-androgens are taken orally and inhibit ligand binding and consequent Androgen Receptor translocation from the cytoplasm to the nucleus.

Thus, option B is correct. Ref: GG, topic: Antiandrogens

325. B. The agonistic action of Methylergometrine on dopamine receptors

Methylergometrine and ergometrine:

- Can decrease milk secretion if higher doses are used for many days postpartum
- This is due to inhabitation of prolactin release (dopamine action)

Thus, option B is correct. Ref: KDT, Topic: Oxytocics

326. C. Tesamorelin

GnRH agonists:

- Buserelin (nasal)
- Goserelin
- Leuprolide
- Nafarelin (nasal route)
- TriptoreliDeslorelin

Tesamorelin:

- A modified form of human GnRH
- Resistant to degradation by dipeptidyl peptidase 4
- Has a prolonged duration of action
- Able to increase the levels of GH and IGF-1
- FDA-approved for treatment of HIV-associated lipodystrophy but not for GH deficiency

Thus, option C is correct. Ref: GG, Topic: pituitary hormones

327. C. Both a and b

Cabergoline

- Has been linked to valvar heart disease
- An effect proposed to reflect agonist activity at the serotonin 5-HT2B receptor

Pergolide:

- Has been linked to valvar heart disease
- In part due to concerns of valvar heart disease, pergolide has been withdrawn from the market.

Echocardiography assessment seems appropriate for patients receiving chronic therapy with carbolic and pergolide, particularly those on higher doses.

Thus, option C is correct. Ref: GG, Topic : pituitary hormones

328. A. Acute Stomatitis

Octreotide:

- Long-acting somatostatin analogue

Uses:

- Acute bleeding due to oesophagal varices
- Acromegaly
- Islet cell tumours
- Secretory diarrhoea in carcinoid syndrome and VIPoma
- Diarrhoea due to vagotomy, short bowel syndrome and AIDS.
- Treatment and prophylaxis of acute pancreatitis

Thus, option A is correct. Ref: GG, Topic: pituitary hormones

329. B. Diagnostic imaging of osteosarcoma

Octreoscan:

- Are modified forms of octreotide labelled within indium or technetium
- It has been used for diagnostic imaging of neuroendocrine tumors such as pituitary adenomas and carcinoids.

Thus, option B is correct. Ref: GG, Topic : pituitary hormones

330. D. HIV-associated lipodystrophy

Tesamorelin:

- A modified form of human GHRH
- Resistant to degradation by dipeptidyl peptidase 4
- Has a prolonged duration of action
- Able to increase the levels of GH and IGF-1
- FDA approved for treatment of HIV-associated lipodystrophy but not for GH deficiency

Thus, option D is correct. Ref: GG, Topic : pituitary hormones

331. B. It is a GLP-1 agonist

GLP-1 agonists:

- Incretins increase glucose-stimulated insulin secretion
- Drugs which are GLP-1 receptor agonist or enhance endogenous GLP-1 activity are approved for the treatment of type 2 DM
- Agents in this class do not cause hypoglycemia because of the glucose-dependent nature of incretin stimulated insulin secretion
- Exenatide, a synthetic version of a peptide initially identified in the saliva of the Gila moinster (exendin-4) is an analogue of GLP-1
- Unlike native GLP-1, which has a half-life of >5 min, differences in the exenatide amino acid sequence render it resistant to the enzyme that degrades GLP-1 (dipeptidyl peptidase IV [DPP-IV])
- Thus, exantide has prolonged GLP-1 like action and binds to GLP-1 receptors found in islets, the gastrointestinal tract, and the brain
- Liraglutide, another GLP-1 receptor agonist is almost identical to native GLP-1 except for an amino acid substitution and the addition of a fatty acyl group (coupled with a y-glutamic acid spacer) that promote binding to albumin and plasma proteins and prolong its half-life.
- GLP-1 receptor agonists increase
- Glucose-stimulated insulin secretion, suppress glucagon and slow gastric emptying. These ag[illegible] no[illegible] promote weight gain: in fact, mos[illegible] patients experience modest weight loss and appetite suppression
- Treatment with these agents should start at a low dose to minimize initial side effects (nausea being the limiting one), GLP-1 receptor agonists, available in twice.

Thus, option B is correct. Ref: Harrison, Topic Diabetes

332. D. Pramlintide can be given in patients with gastroparesis

Pramlindte:

Acts through the amylin receptor in specific regions of the hindbrain

- Amylin receptor reduces glucagon secretion, delays gastric emptying, and
- Fosters a feeling of safety
- Administered as a subcutaneous injection prior to meals

Adverse Effects:

- Nausea and Hypoglycemia (MC)
- Pramlindte alone does not lower blood glucose, addition to insulin at mealtimes can cause increased rates of hypoglycemia, occasionally severe.
- Because of its effects on GI motality
- Pramlindte is contradicted in patients with gastroparesis or other disorders of motality
- Pregnancy category C drug
- Can be used in persons with moderate renal dieseas (creatinine clearance > 20ml/min)

Thertapeutic Uses:

- Approved for treatment **of types 1 and 2 diabetes** as an adjunct in patients who take insulin with meals.

Thus, option D is correct. Ref: GG

333. B. Pioglitazone

Pioglitazone

Preclinical and clinical trial data, and results from an observational study suggest an increased risk of bladder cancer in Pioglitazone users. The observational data further suggest that the risk increases with duration of the age

- Do not use in patients with active bladder cancer
- Use caution when using in patients with a prior history of bladder cancer.

Thus, option B is correct.

334. D. Prednisolone

Osteoporosis is a common cause of pathological vertebral fractures. Chronic systemic use of corticosteroids like prednisolone promotes osteoporosis and therefore may cause such fractures.

Thus, option D is correct. Ref: KK Sharma 2E/P 573 Topic : Steroids

335. A. Prednisolone

Prednisolone (corticosteroids) act through cytoplasmic receptors whereas thyroid hormones (Ty T4), retinoids (vitamin A) and thiazolidinedione (like rosiglitazone) have nuclear receptors.

Thus, option A is correct. Ref: KDT, Topic:

336. C. Osteoporosis

Teriparatide is a recombinant PTH having first 34 amino acids. It can be used for the treatment of osteoporosis.

Thus, option C is correct. Ref: KDT, Topic: Steroids

337. C. Diabetes mellitus

Exenatide is a glucagon like peptide analogue which is proposed to be used in the treatment of post prandial hyperglycemia.

Thus, option C is correct. Ref: Katzung 14E/P 701 Topic Diabetes

338. C. Ritodrine

Isoxsuprine and ritodrine are selective 132 agonists useful as tocolytic agents for arresting labour. Pulmonary edema is an important adverse effect of these agents.

Thus, option C is correct. Ref: KDT, Topic: tocolytics

339. D. Take 2 pills the next day and continue with the course

- If a woman misses one pill of OCP, she should take 2 pills next day and then continue one pill a day as usual.
- If the pills have been missed for 2-3 days, then the course should be stopped, mechanical barriers (like condom) should be used and the next course should start from the 5th day of menses as usual.

Thus, option D is correct. Ref: KDT, Topic: contraceptives

340. C. Mifepristone

- Single 600 mg dose of mifepristone taken within 72 hours of unprotected intercourse is an effective method to prevent pregnancy.
- Two tablets of OCP within 72 hours of unprotected intercourse followed by 2 tablets after 12 hours can also be used as a post-coital contraceptive method.
- Two tablets of levonorgestrel (0 75 mg each) taken 24 hours apart can also be used for emergency contraception.

Thus, option C is correct. Ref: KDT, Topic: contraceptives

341. D. Blocks the increased risk of endometrial carcinoma due to estrogen

Use of estrogen for the treatment or prevention of post-menopausal osteoporosis places a patient at the risk of breast and endometrial carcinoma.

Progesterone is used to decrease the risk of endometrial carcinoma.

Thus, option D is correct. Ref: KDT, Topic: Hormone replacement therapy

342. **A. Finasteride**

- 5-a-reductase inhibitors are used to reduce the static component of urinary obstruction in BHP. It is delayed acting and takes more than 3 months to exert its beneficial effect.
- Selective a, blockers are used to relieve the dynamic obstruction in BHP. These provide rapid symptomatic relief.

Thus, option A is correct. Ref: KDT, Topic: 5 alpha reductase inhibitors

343. Ortho-toluidine is an oxidizing agent and it is a metabolite of

A. Procaine B. Prilocaine
C. Lignocaine D. Tetracaine

344. Drug used for 'narcoanalysis' of criminals is

A. Methohexitone
B. Propofol
C. Thiopentone
D. Ketamine

345. A patient, Tina was anesthetized with halothane and nitrous oxide and tubocurarine was used for skeletal muscle relaxation. She became hypertensive along with marked muscle rigidity and hyperthermia. Lab reports showed that she has developed hyperkalemia and acidosis. This complication was caused by

A. Block of autonomic ganglia by tubocurarine
B. Excessive release of calcium from the sarcoplasmic reticulum
C. Activation of brain dopamine receptors by halothane
D. Pheochromocytoma

346. A young man having pheochromocytoma has BP of 188/92 mm Hg and a hematocrit of around 50%. Pulmonary function tests and renal functions are normal. His catecholamines are elevated. Which of the following drugs should not be included in the anesthesia protocol?

A. Desflurane B. Fentanyl
C. Midazolam D. Halothane

347. Postoperative vomiting is uncommon with this intravenous anesthetic agent and patients are able to ambulate sooner than those who receive other anesthetic agents

A. Propofol B. Enflurane
C. Ketamine D. Remifentanil

348. If ketamine is the only agent used in reducing a dislocated shoulder, Its actions will include

A. Hypotension
B. Bradycardia
C. Analgesia
D. Respiratory depression

349. Ketamine is the preferred anesthetic for the following Except

A. Short operations on asthmatics
B. Trauma cases that have bled significantly
C. Burn dressing
D. Hypertensive

350. Dissociative anesthesia is produced by

A. Propofol
B. Fentanyl
C. Ketamine
D. Both (a) and (b) are correct

351. Malignant hyperthermia is a rare complication of the use of the following anesthetic

A. Halothane
B. Thiopentone sodium
C. Ketamine
D. Ether

352. As a general anesthetic, halothane has the following advantages EXCEPT

A. Reasonably rapid induction of anesthesia
B. Non-inflammable and non-explosive
C. Very good analgesic action
D. Pleasant and non-irritating

343. b	344. c	345. b	346. d	347. a	348. c	349. d	350. c	351. a	352. c

353. Ether is still used as a general anesthetic in India. Specially in peripheral hospitals because:

A. It is nonexplosive
B. It is cheap and can be administered without anesthetic machine
C. It induces anesthesia rapidly
D. It is pleasant smelling and non-irritating

354. Which of the following general anesthetics has poor muscle relaxant action?

A. Ether B. Isoflurane
C. Halothane D. Nitrous oxide

355. Second gas effect is exerted by which of the following gas when coadministered with halothane

A. Helium
B. Cyclopropane
C. Nitrogen
D. Nitrous oxide

356. Which general anesthetic selectively inhibits excitatory NMDA receptors

A. Ketamine B. Halothane
C. Desflurane D. Thiopentone

357. The minimal alveolar concentration of an inhalational anesthetic is a measure of its

A. Diffusibility
B. Therapeutic Index
C. Potency
D. Ketamine

358. While performing a rapid sequence intubation in the operation theatre, a patient was given a standard intravenous dose of muscle relaxant "A". To maintain the muscle relaxation during surgery, another muscle relaxant Vecuronium was given. At the end of the surgery, neostigmine was used to reverse the residual muscle relaxation. However, the patient did not respond and continued to display too much muscle paralysis to permit safe extubation. Drug A was most likely to be?

A. Pancuronium
B. Tubocurarine
C. Midazolam
D. Succinylcholine

359. Which of the following drugs is hydrolyzed by a plasma esterase that is a normally low in activity in about 1 in every 2500 humans?

A. Succinylcholine
B. Rifampicin
C. Cimetidine
D. Ethanol

360. Patient undergoing surgery was given a muscle relaxant. It produced marked fall in B. P. and increase in airway resistance which were reversed with diphenhydramine. The muscle relaxant was most probably

A. Tubocurarine B. Diazepam
C. Atracurium D. Vecuronium

361. One of the following statements about succinylcholine is true

A. It is the drug of choice in non-traumatic rhabdomyolysis
B. It has a long duration of action
C. It may induce life threatening hyperkalemia
D. It is useful in patients with spinal cord injuries with paraplegia

362. Which of the following is a skeletal muscle relaxant that acts as a central a_2 adrenergic agonist.

A. Chlormezanone
B. Brimonidine
C. Tizanidine
D. Quinine

363. Dantrolene sodium reduces skeletal muscle tone by

A. Reducing Ca2+ release from sarcoplasmic reticulum in the muscle fibre
B. Suppressing spinal polysynaptic reflexes
C. Inhibiting the generation of muscle action potential
D. Reducing acetylcholine release from motor nerve endings

353. b	354. d	355. d	356. a	357. c	358. d	359. d	360. a	361. c	362. c
363. a									

364. The following antibiotic accentuates the neuromuscular blockade produced by Pancuronium

A. Penicillin G
B. Erythromycin
C. Streptomycin
D. Chloramphenicol

365. The most rapidly acting nondepolarizing neuromuscular blocking agent which can be used as an alternative to succinylcholine for tracheal intubation is

A. Pipecuronium
B. Pancuronium
C. Doxacurium
D. Rocuronium

366. The neuromuscular blocker that does not need reversal of action by neostigmine at the end of the operation is

A. d-Tubocurarine
B. Mivacurium
C. Pipecuronium
D. Doxacurium

367. Pancuronium differs from tubocurarine in that

A. It can cause rise in BP on rapid I. V. injection
B. Its action is not reversed by neostigmine
C. It is a depolarizing blocker
D. It causes marked histamine release

368. The fall in blood pressure caused by d-tubocurarine is due to

A. Reduced venous return
B. Ganglionic blockade
C. Histamine release
D. All of the above

369. Which of the following drugs have a high surface activity and vasoconstrictor actions that reduce bleeding in mucus membranes?

A. Bupivacaine B. Procaine
C. Lidocaine D. Cocaine

370. Ram has a 4 ml lignocaine vial of 2% solution. How much lignocaine is present in 1 ml?

A. 20 mg B. 8mg
C. 2mg D. 200 mg

371. AU of the following are properties of local anesthetics EXCEPT

A. Blockade of voltage dependent Na+ channels
B. Increase in the membrane refractory period
C. Slowing of axonal impulse conduction
D. Preferential binding to resting channels

372. Epinephrine added to a solution of lignocaine for a peripheral nerve block will

A. Increase risk of convulsions
B. None of these
C. Both (a) and (b)
D. Increase the duration of action of the local anesthetic

373. An agent added to local anesthetic to speed the onset of action is

A. Methylparapben
B. Adrenaline
C. Fentanyl
D. Bicarbonate

374. A patient receives a toxic dose of lignocaine I. v.; the patient is likely to exhibit.

A. Seizures and coma
B. Mydriasis and diarrhea
C. Respiratory paralysis
D. Excessive salivation

375. Intravenous regional anesthesia is suitable for

A. Head and neck surgery
B. Vascular surgery on the lower limb
C. Orthopedic manipulation on the upper limb
D. Caesarian section

364. c	365. d	366. b	367. a	368. d	369. d	370. a	371. d	372. d	373. d
374. a	375. C								

376. The duration of spinal anesthesia depends on all of the following EXCEPT

A. Local anesthetic that is used
B. Concentration of the local anesthetic used
C. Whether adrenaline has been added to the local anesthetic
D. Posture of the patient

377. In spinal anesthesia the segmental level of

A. Sympathetic block is lower than the sensory block
B. Sympathetic, motor and sensory block has the same level
C. Motor block is higher than the sensory block
D. Sympathetic block is higher than the sensory block

378. The segmental level of spinal anesthesia depends on

A. Volume of the local anesthetic injected
B. Specific gravity of the local anesthetic solution
C. Posture of the patient
D. All of the above

379. Eutectic lignocaine-prilocaine has the following unique property

A. It causes motor blockade without sensory block
B. It has strong vasoconstrictor action
C. It is not absorbed after surface application
D. By surface application, it can anaesthetize unbroken skin

380. The local anesthetic with the longest duration of action is

A. Dibucaine
B. Chlorprocaine
C. Lignocaine
D. Procaine

381. The following local anesthetic raises BP instead of tending to cause a fall

A. Lignocaine B. Dibucaine
C. Cocaine D. Procaine

382. Which of the following statements is not true of local anesthetics?

A. The local anesthetic binds to its receptor mainly when the Na^+ channel is in the resting state
B. me local anesthetic approaches its receptor only from the in neuronal face of the Na^+ channel
C. The local anesthetic is required in the unionized form for penetrating the neuronal membrane
D. The local anesthetic combines with its receptor in the ionized cationic form

383. A patient is having a malignancy and has been suffering from severe pain. Which of the following opioid analgesics can be used as transdermal patch for alleviation of pain in him?

A. Fentanyl B. Pentazocine
C. Morphine D. Tramadol

384. Which of the following drugs is a full agonist at opioid receptors, has excellent oral bioavailability, analgesic equipotency to morphine and a longer duration of action with milder withdrawal symptoms on abrupt discontinuation?

A. Methadone
B. Hydromorphone
C. Fentanyl
D. Nalbuphine

385. Which of the following drugs does not activate opioid receptors, has been proposed as a drug in the management of opioid addiction and with just a single dose blocks the action of injected heroin for up to 48 hours?

A. Amphetamine
B. Naltrexone
C. Methadone
D. Buspirone

386. Drug used for 'narcoanalysis' of criminals is

A. Methohexitone
B. Propofol
C. Thiopentone
D. Ketamine

376. d	377. d	378. d	379. d	380. a	381. c	382. a	383. a	384. a	385. b
386. c									

387. Which of the following centrally acting skeletal muscle relaxant is GABA mimetic

A. Mephenesin
B. Thiocolchocoside
C. Chlorzoxazone
D. Methocarbamol

388. Sugamadex is developer for the reversal of

A. Pancuronium
B. Vecuronium
C. Pipecuronium
D. Succinyl choline

389. Which of the following is longest acting non-depolarizing skeletal muscle relaxant

A. Metocurine
B. Pipecuronium
C. Pancuronium
D. Doxacurium

390. Which of the following is shortest acting depolarizing skeletal muscle relaxant

A. Mivacurium
B. Ganatacurium
C. Succinylcholine
D. Rocuronium

391. Following drugs are metabolized by pseudocholinestrase except

A. Succinylcholine
B. Amlodipine
C. Mivacurium
D. Clevidipine

392. Following concentrations of adrenaline are used alone with Local Anesthetic drug during Local anesthesia except

A. 1:50,000 B. 1:2,50,000
C. 1:1,00,000 D. 1:2,00,000

393. Eutectic Mixture of Local Anesthetics contain

A. 2.5% lidocaine and 2.5% procaine
B. 2.5% lidocaine and 2.5% procaine
C. 5% lidocaine and 2.5% prilocaine
D. 2.5% lidocaine and 5% procaine

394. Highest rate of liver metabolism is seen with following amide local anesthetic

A. Prilocaine
B. Bupivacaine
C. Levobupivacaine
D. Procaine

395. Which of the following local anesthetic is more water soluble among the following

A. Tetracaine B. Rupivacaine
C. Lidocaine D. Rupovacaine

396. Which of the following is an ester local anesthetic

A. Lidocaine B. Mepivacaine
C. Benzocaine D. Bupivacaine

397. Which nerve fiber type is least susceptible to Local Anesthetic

A. A Alpha B. C type
C. A delta D. B type

398. A 32-year-old male is known hypertensive and is being planned for cholecystectomy. Which of the following anesthetic agents is contraindicated in this person?

A. Propofol B. Midazolam
C. Etomidate D. Ketamine

399. Drug contraindicated in head injury with raised ICP is

A. Ketamine
B. Thiopentone
C. Methohexitone
D. Propofol

400. Pain on injection due to Propofol can be minimized by

A. Use of Lidocaine
B. Use of larger arm
C. Use of antecubital veins
D. All of the above

401. Which of the following inhaled anesthetics has highest extent of hepatic metabolism

A. Sevoflurane B. Isoflurane
C. Enflurane D. Desflurane

387. b	388. b	389. d	390. c	391. b	392. b	393. a	394. a	395. c	396. c
397. b	398. d	399. a	400. d	401. c					

402. Which of the following inhalational anesthetic is not a volatile liquid

A. Ether
B. Halothane
C. Isoflurane
D. Nitrous oxide

403. Intravenous anesthetic shown to be effective in depression is

A. Diazepam
B. Ketamine
C. Thiopentone
D. Etomidate

404. Drug having agonist action at the TREK channel is

A. CNO
B. Xenon
C. Halothane
D. Sevoflurane

405. Caffeine-halothane contracture test is used for

A. Detection of susceptibility to halothane induced hepatitis
B. Detection of halothane induced uterine relaxation
C. Detection of generic susceptibility to halothane induced malignant hyperthermia
D. None of the above

406. Which of the following is incorrect about Remifentanil

A. Useful for short painful procedures
B. Administered by intravenous bolus dose
C. Metabolized in plasma esterase
D. Long acting anesthetic

407. Xenon anesthesia all are true except

A. Non-Explosive
B. Minimal cardiovascular side-effects
C. Low blood solubility
D. Slow induction and recovery

408. Nitrous oxide is

A. Good muscle relaxant
B. Lighter than air
C. Good analgesic
D. Highly soluble in blood

409. False about ketamine is

A. Phencyclidine derivative
B. Causes "dissociative anesthesia"
C. S form is more potent than the R isomer
D. Produces least analgesia among intravenous anesthetics

410. Least postoperative vomiting is seen with

A. Fentanyl B. Etomidate
C. Propofol D. Ketamine

411. A patient with mitral stenosis had to undergo surgery. Pre-anesthetic checkup revealed the increased liver enzymes. Which of the following inhalational agent should be preferred in this patient?

A. Enflurane B. Halothane
C. Xenon D. Sevoflurane

412. Most potent inhalational anesthetics exerting stabilizing effect on the post junctional membrane at NMJ is

A. Sevoflurane
B. Isoflurane
C. Halothane
D. Desflurane

413. Anesthesia intraindicated in a intraocular air bubble is

A. Halothane
B. Nitrous oxide
C. Ketamine
D. Desflurane

402. d	403. b	404. b	405. c	406. d	407. d	408. c	409. d	410. c	411. c
412. d	413. b								

343. B. Prilocaine

Ortho-toluidine is an oxidizing agent and it is a metabolite of **prilocaine**

Prilocaine cause Methemoglobinemia due to accumulation of ortho-toluidine, WHICH is consequence of the metabolism of the aromatic ring.

Thus, option B is correct. Ref: KAT, Topic Local anaesthetics

344. C. Thiopentone

Thiopentone:

Gradual i.v. infusion of subanaesthetic does can be used to facilitate verbal communication with psychiatric patients and for 'narcoanalysis' of criminals; acts by knocking off guarding.

Thus, option C is correct. Ref: KDT, Topic: General Anaesthetics

345. B. Excessive release of calcium from the sarcoplasmic reticulum

The symptoms of the patient (muscle rigidity, hypertension, hyperthermia, hyperkalemia and acidosis) suggests the diagnosis of malignant hyperthermia.

- Halothane can precipitate malignant hyperthermia in susceptible individuals. SCh increases this incidence.
- Malignant hyperthermia is due to excessive release of Ca2* from the sarcoplasmic reticulum.
- Drug of choice for malignant hyperthermia is Dantrolene that inhibits the release of Ca2+ (by blocking ryanodine receptors in the sarcoplasmic reticulum

Thus, option B is correct. Thus, option A is correct. Ref: KDT, Topic: General anaesthetics

346. D. Halothane

- Halothane sensitizes the heart to arrhythmogenic action of catecholamines.
- In pheochromocytoma, there are elevated levels of catecholamines.
- Therefore, halothane should not be used in patients with pheochromocytoma.

Thus, option D is correct. Thus, option A is correct. Ref: KDT, Topic: General anaesthetics

347. A. Propofol

Propofol is the most commonly used anesthetic agent for `day care surgery'.

Thus, option A is correct. Thus, option A is correct. Ref: KDT, Topic: General anaesthetics

348. C. Analgesia

- Ketamine is a powerful analgesic agent.
- It increases blood pressure, intraocular pressure and intracranial tension.
- It does not depress CVS and respiratory system.

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

349. D. Hypertensive

Ketamine is contra-indicated in hypertensive because it increases the blood pressure.

It is the induction agent of choice for:

- Asthmatics
- Shock
- Children
- Full stomach
- It possesses very powerful analgesic action.
- It can be used as a sole agent for minor procedures.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

350. C. Ketamine

- Ketamine produces dissociative anesthesia
- Neurolept analgesia is produced by fentanyl droperidol

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

351. A. Halothane

Rarely, halothane can cause malignant hyperthermia, which is treated with Dantrolene

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

352. C. Very good analgesic action

- Newer inhalational anesthetic agents like halothane, isoflurane etc. lack analgesic activity.
- All other advantages listed in the question are present in halothane.

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

353. B. It is cheap and can be administered without anesthetic machine

- Ether is the only complete anesthetic agent.
- It is highly inflammable and explosive.
- It has good analgesic and muscle relaxant action.
- It can be delivered by open method.
- It is a pungent smelling liquid.
- Induction of anesthesia with ether is quite slow. All the four stages can be seen.

Thus, option B is correct. Ref: KDT, Topic: Anaesthetic agents

354. D. Nitrous oxide

- Nitrous oxide is not a complete anesthetic (MAC 104%).
- It is a good analgesic but poor muscle relaxant.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

355. D. Nitrous oxide

Concentration effect, second gas effect and diffusion hypoxia are seen with inhalational agents used in high concentrations (like N_2O).

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

356. A. Ketamine

- Ketamine is an intravenous inducing agent. It acts by blocking NMDA receptors.
- Hallucinations, delirium and vivid dreams are important adverse effects that are seen during recovery from anesthesia (emergence reaction).
- It increases blood pressure, intraocular pressure and intracranial tension.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

357. C. Potency

- MAC is inversely related to potency of an inhalational agent.
- N2O has maximum MAC (104%) and is thus the least potent agent.
- Methoxyflurane is the most potent drug due to minimum value of MAC.

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

358. D. Succinylcholine

- There are two clues to the correct answer in this scenario.
- The patient underwent rapid sequence intubation (RSI). A depolarizing neuromuscular blocking drug is commonly administered for RSI, because onset of action is generally more rapid (within 60 seconds) than for most available non depolarizing blockers.
- The patient still exhibits residual muscle paralysis even after neostigmine, an anti-cholinesterase. The persistence of paralysis indicates that Drug A is a depolarizing blocker. Anticholinesterases do not reverse the action of depolarizing and may, in fact, enhance them.
- The only depolarizing blocker listed among the options is succinylcholine. In patients with atypical pseudo cholinesterase, SCh may produce prolonged paralysis and apnea.

Thus, option D is correct. Ref: Katzung

359. A. Succinylcholine

- SCh is the shortest acting muscle relaxant due to its metabolism by pseudo cholinesterase.
- Some patients contain an atypical pseudo cholinesterase (which has abnormally low activity) and are susceptible to develop apnea with the use of this drug.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

360. A. Tubocurarine

- Hypotension and bronchoconstriction (increase in airway resistance) are important adverse effects caused by histamine. This is confirmed to be due to histamine because of reversal with diphenhydramine.
- Maximum histamine release is caused by d-tubocurarine.
- Atracurium causes minimum histamine release, therefore is preferred agent in asthmatic patients.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

361. C. It may induce life threatening hyperkalemia

- SCh is the shortest and fastest acting muscle relaxant.
- SCh is contra-indicated in patients with nerve or muscle disorders due to the risk of hyperkalemia
- Nerve disorders: Hemiplegia, paraplegia, Guillain Barre syndrome etc.
- Muscle diorders: Myopathy, myasthenia gravis, rhabdorivolysis, crush injury etc.

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

362. C. Tizanidine

- Tizanidine and Brimonidine are cc, adrenergic agonists. Tizanidine is used as a centrally acting muscle relaxant whereas Brimonidine is used topically for the treatment of glaucoma.
- Chlormezanone is a centrally acting muscle relaxant that acts by inhibiting the spinal internuncial neurons.
- Quinine is a directly acting peripheral muscle relaxant.

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

363. A. Reducing Ca^{2+} release from sarcoplasmic reticulum in the muscle fibre

- Dantrolene is the drug of choice for the treatment of malignant hyperthermia and neurolept malignant syndrome.
- It acts as an antagonist of ryanodine receptors (present on smooth endoplasmic reticulum). It inhibits the release of Cat' from sarcoplasmic reticulum in the muscle fibre.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

364. C. Streptomycin

- Aminoglycosides (like streptomycin and gentamicin) can accentuate the neuromuscular blockade produced by competitive blockers (like pancuronium
- Mechanism of neuromuscular blockade produced by aminoglycosides is the inhibition of presynaptic release of ACh.

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

365. D. Rocuronium

- Rocuronium is the fastest acting non-depolarizing muscle relaxant (NDMR). It can be used for the rapid sequence endotracheal intubation in patents
- having contra-indications to the use of SCh.
- Mivacurium is the shortest acting NDMR.
- SCh is the shortest and fastest acting skeletal muscle relaxant. It is a depolarizing NM blocker.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

366. B. Mivacurium

- Long acting non-depolarizing (competitive) NM blocking agents require reversal with neostigmine.
- Mivacurium is the shortest acting NDMR. It does not require reversal due to its short duration of action.
- Mivacurium can be used in day care surgery.

Thus, option B is correct. Ref: KDT, Topic: Anaesthetic agents

367. A. It can cause rise in BP on rapid I. V. injection

- Ancuronium possesses vagolytic activity and can cause hypertension and tachycardia on rapid i.v. injection.
- Pancuronium is a competitive NM blocker (Non-depolarizing NM blocker). Its actions can be reversed by anticholinesterases like neostigmine.
- Unlike d-TC, histamine release is not seen with Pancuronium.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

368. D. All of the above

- d-tubocurarine is a competitive NM blocker. It produces fall in BP due to:
  - Blockade of sympathetic ganglia.
  - Histamine release.
  - Reduced venous return as a result of paralysis of limb and respiratory muscles.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

369. D. Cocaine

- All LAs are vasodilators except cocaine. It possesses vasoconstrictor activity.
- Cocaine also has good surface activity.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

370. A. 20 mg

- 1% solution means 1g (1000 mg) of a drug is present in 100 ml of the solution.
- 2% means 2000 mg in 100 ml of solution.
- Therefore 1 ml will contain 20 mg.

Thus, option A is correct.

371. D. Preferential binding to resting channels

LAs act from within the neuron and are more active when the neuron is rapidly firing (i.e., Na^+ channels are open).

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

372. D. Increase the duration of action of the local anesthetic

- Adrenaline and felypressin are the vasoconstrictors that are added to LA solution.
- By causing vasoconstriction, these drugs decrease the systemic absorption resulting in less CNS adverse effects (decreased chances of seizures).
- Prolong the stay of drug at the site of action resulting in the increase in duration of action of LA.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

373. D. Bicarbonate

LAs are weak bases. These require penetration inside the neuron for their action. For entry in the neuron, LAs have to cross the new membrane.

Unionized drugs (lipid soluble) can easily cross the membrane, therefore addition of $NaHCO_3$, in the local anesthetic solution (weak base are unionized in the alkaline medium) makes them rapid acting.

Adrenaline increases the duration of action by causing vasoconstriction.

Methylparapben is the preservative added in LA solution.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

374. A. Seizures and coma

If LA reaches the blood stream, most prominent adverse effects are related to CNS and CVS.

In CNS, stimulation (convulsions) followed by depression (coma) is seen. Initial stimulation is due to inhibition of the inhibitory neurons.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

375. C. Orthopedic manipulation on the upper limb

IVRA is indicated for procedures on upper limb or lower limb of less than one-hour duration.
Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

376. D. Posture of the patient

Posture of the patient determines the height of block, not the duration.
Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

377. D. Sympathetic block is higher than the sensory block

Spinal anesthesia creates a zone of differential blockade in which sympathetic fibers are blocked two segments higher and motor fibers are blocked two segments lower than the level of sensory block.
Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

378. D. All of the above

Factors affecting the height of block:

- Volume of drug
- Baricity (Ratio of specific gravity of an agent to that of CSF).
- Position of the patient
- Infra-abdominal pressure
- Curvature of spine

Factors affecting duration of block:

- Dose
- Concentration
- Drug (LA used)
- Added vasoconstrictors

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

379. D. By surface application, it can anaesthetize unbroken skin

- Lignocaine or prilocaine cannot anaesthetize intact skin.
- Eutectic mixture is the combination of equal proportions of lignocaine and prilocaine at 25 °C. This mixture has a lower melting point than any of the two ingredients. It helps to make the preparation oily that can be applied on the intact skin.
- Eutectic mixture can be used to anaesthetize intact skin.

Thus, option D is correct. Ref: KDT, Topic: Anaesthetic agents

380. A. Dibucaine

- Longest acting, most potent and most toxic LA is dibucaine.
- Chlorprocaine is the shortest acting LA.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

381. C. Cocaine

- All LAs cause hypotension except cocaine.
- Cocaine increases blood pressure by inhibiting the reuptake of catecholamines.

Thus, option C is correct. Ref: KDT, Topic: Anaesthetic agents

382. A. The local anesthetic binds to its receptor mainly when the Na+ channel is in the resting state

- All LAs are weak bases.
- LAs act by blocking Na+ channels from inside the neuron (intraneuronal face).
- These can cross the membrane only in unionized (lipid soluble) form. Sodium bicarbonate is therefore added to make the LA rapid acting.
- Once inside the neuron, LAs again gets ionized and bind to Na+ channels.
- Binding to Na+ channels is more in repetitively firing neurons than in resting neurons.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

383. A. Fentanyl

Fentanyl can be used as a transdermal patch for prolonged treatment of cancer associated pain.
Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

384. A. Methadone

- Methadone is a long acting opioid agonist that has equal potency to morphine.
- It can be used orally for opioid replacement and opioid rotation therapy.
- Due to longer half-life, it produces mild withdrawal symptoms.

Thus, option A is correct. Ref: KDT, Topic: Anaesthetic agents

385. B. Naltrexone

Naltrexone is a long acting, orally effective opioid antagonist that can be used as the maintenance treatment of opioid addicts. It is also used to decrease the craving for alcohol.

Thus, option A is correct. Ref: KDT, Topic:

386. C. Thiopentone

Thiopentone:

Gradual i.v. infusion of subanaesthetic does can be used to facilitate verbal communication with psychiatric patients and for 'narcoanalysis' of criminals; acts by knocking off guarding.

Thus, C is correct. Ref: KDT, Topic:

387. B. Thiocolchocoside

- Mephenesin congeners
- Mephenesin
- Cariosoprodol
- Chlorzoxazone
- Chlormezanone
- Methocarbamol
- Benzodiazepines: Diazepam
- GABA mimetic: Baclofen, Thiocolchicoside
- Central a2 agonist Tizanidine

Thus, B is correct.

388. B. Vecuronium

Sugamadex:

- **Reversing agent** developed for terminating the action of non-polarizing muscle relaxants **rocuronium and vecuronium**
- It is a modified Y-cyclodextrin with high affinity for rocuronium and vecuronium
- It encapsulates one molecule of the blocker within its molecule forming an inactive chelate which is excreted in urine with a t1/2 of -2 hour
- As a plasma concentration of free rocuronium falls, it rapidly dissociates from the Nm receptor and neuromuscular transmission is restored
- The mechanism of reversal by Sugamadex is entirely different from that of the currently used reversing agents neostigmine and edrophonium.

Thus, B is correct. Ref: KDT Topic:

389. D. Doxacurium

- Shortest acting non-depolarizing skeletal muscle relaxant is gantacurium > Mivacurium
- Longest acting non-polarizing skeletal muscle relaxant is Doxacurium
- Metocurine – 110min
- Pipecuronium – 30-90min
- Pancuronium – 85-100min

Thus, D is correct. Ref: GG

390. C. Succinylcholine

- Shortest acting depolarizing skeletal muscle relaxant is Succinylcholine
- Shortest acting depolarizing skeletal muscle relaxant is Ganatacurium > Mivacurium

Thus, C is correct. Ref: GG

391. B. Amlodipine

Drug metabolized by plasma/ pseudocholinestrase

- Succinylcholine
- Mivacurium
- Ester group of Las
- Clevidipine
- Remifentanil
- Ciclesonide, Beclomethasone (lung esterases)
- Esmolol by erythrocyte esterases

Thus, B is correct. Ref: GG

392. B. 1:2,50,000

Concentrations of adrenaline used alone with Local Anesthetic drug during Local anesthesia is 1:50,000 to 1: 200,000

The concentrations has following advantages

- Prolongs duration of action of Las
- Enhances the intensity of nerve block
- Reduces systemic toxicity of Las
- Provides a more bloodless field for surgery

Thus, B is correct. Ref: KDT, Topic:

393. A. 2.5% lidocaine and 2.5% procaine

EMLA (Eutectic Mixture of Local Anesthetics)

- Combination of elements has lower melting temperature than its component elements
- Lidocaine and prilocaine can combine to form such a mixture
- This formulation, containing 2.5% lidocaine and % prilocaine
- Anesthetic penetration of the keratized layer of skin, producing localized numbness
- Commonly used in pediatrics to anesthetize the skin prior to venipuncture for

Intravenous catheter placement

Thus, A is correct. Ref: KAT

394. A. Prilocaine

Rate of liver metabolism of individual amide compounds

- Prilocaine (fastest) > lidocaine > Mepivacaine ropivacaine = bupivacaine and Levobupivacaine (slowest)

Clinical Implications:

- Toxicity from amide-type local anesthetics is more likely to occur in patients with hepatic disease.
- The average elimination half-life of lidocaine may be increased from 1.6 hours in normal patients to more than 6 hours in patients with severe liver disease.

Thus, A is correct. Ref: KAT

395. C. Lidocaine

Local anesthetics:

- Smaller and more highly lipophilic local anesthetics have a faster rate of interaction with the sodium channel receptor
- Potency is also positively correlated with lipid solubility
- Lidocaine, procaine and Mepivacaine are more water soluble than Tetracaine, bupivacaine and ropivacaine.

Clinical implications:

- Tetracaine, bupivacaine and ropivacaine are more potent and less water soluble
- They have longer durations of local anesthetic action because of lipophilicity
- They also bind more extensively to proteins and can be displayed from these bindings sites by other protein-bound drugs.

Thus, C is correct. Ref: KAT

396. C. Benzocaine

Ester have single 'I' in the name

- Example: Benzocaine, Cocaine, Chlorprocaine Amides have double "I" in the name
- Example: Lidocaine, Mepivacaine, Bupivacaine

Thus, C is correct. Ref: KDT, Topic:

397. B. C type

Susceptibility of nerve fibers to LA:

A > B > C

A (gamma > delta > beta > alpha)

Thus, B is correct. Ref: Miller's Anesthesia/P 1033

398. D. Ketamine

Analyzing the history, patient is a known hypertensive and is being planned for cholecystectomy Among the given options.

Ketamine increases all pressure like ICP, intra-ocular pressure and blood pressure.

So, in this case patient has hypertension, so Ketamine should be avoided in this patient as it increases blood pressure.

Thus, D is correct. Ref: KAT

399. A. Ketamine

Ketamine:

- Ketamine increases all pressures

- So there it is dangerous for
  - Hypertensives
  - Ischaemic heart disease (increases cardiac work)
  - Congestive heart failure
- Raised intracranial pressure (Ketmine increases cerebral blood flow and O2 consumption).

Thus, A is correct. Ref: KDT, Topic:

400. D. All of the above

Propofol:

- Causes pain on injection
- Can be reduced with lidocaine and the use of larger arm and antecubital veins.

Thus, D is correct. Ref: GG

401. C. Enflurane

Extent of hepatic metabolism for the inhaled anesthetics

Halothane > enflurane > sevoflurane > isoflurane > desflurane > nitrous oxide.

Thus, C is correct. Ref: KAT

402. D. Nitrous oxide

Inhalational anesthetic

Gas:

- Nitrous oxide

Volatile liquids

- Ether
- Halothane
- Isoflurane
- Desflurane
- Sevoflurane

Thus, D is correct. Ref: KDT, Topic:

403. B. Ketamine

Ketamine:

- Intravenous ketamine at sub anesthetic doses produces rapid relief of depression, even in treatment-resistant patients, that may persist for 1 week or longer.

Thus, B is correct. Ref: KAT

404. B. Xenon

Xenon:

- Has analgesic and anesthetic effects
- Effects are mainly due to
- Noncompetitive antagonism of the NMDA receptor
- Agonism at the TREK channel (a member of the two-pore K+ channel family)

Thus, B is correct. Ref: GG

405. C. Detection of generic susceptibility to halothane induced malignant hyperthermia

Caffeine-halothane contracture test:

- The most reliable test to establish susceptibility **to halothane induced malignant hyperthermia** is the in vitro caffeine-halothane contracture test using skeletal muscle biopsy samples.

Thus, C is correct. Ref: KAT

406. D. Long acting anesthetic

Remifentanil:

- Short acting opioid analgesic
- Useful for short painful procedures
- Administered by intravenous bolus dose
- Metabolized by plasma esterases

Thus, D is correct. Ref: GG

407. D. Slow induction and recovery

Xenon:

- Non-explosive rare gas
- Extremely insoluble in blood and other tissues
- So has rapid induction and recovery from anesthesia
- Well tolerated in patients of advanced gas
- Minimal cardiovascular side-effects

Thus, D is correct. Ref: GG

408. C. Good analgesic

Nitrous oxide:

- Is a good analgesic
- Poor Muscle relaxation
- Havier than air
- Low blood solubility, so rapid induction and recovery

Thus, C is correct. Ref: KDT, Topic:

409. D. Produces least analgesia among intravenous anesthetics

Ketamine:

- Lipid-soluble phencyclidine derivative
- Produces significant analgesia among intravenous anesthetics

- Causes "dissociative anesthesia"
- S form is more potent than the R isomer

Thus, D is correct. Ref: KAT

410. C. Propofol

Propofol has a significant antiemetic action, so among options Propofol has Least postoperative vomiting.

Thus, C is correct. Ref: GG

411. C. Xenon

XENON:

- Is the preferred inhalational agent in patients **with liver dysfunction, as xenon is not metabolized in the body**
- Xenon is an inert agent
- Does **not undergo metabolism**
- Hepatic or renal toxicity is not seen

ANAESTHETIC ADJUNCTS:

- Halothane causes hepatitis

Thus, C is correct. Ref: GG

412. D. Desflurane

Many inhalational anesthetics exert a stabilizing effect on the post junctional Membrane:

- They potentiate the activity of competitive NMI blocking agents
- The rank order of potentiation is desflurance > sevoflurane > isoflurane > Halothane > Nitros oxide-barbiturate opioid or propofol.
- Anesthesia

Clinical implication:

- When NMI blockers are used for muscle relaxation as adjuncts to these anesthetics, their doses should be reduced.

Thus, D is correct. Ref: GG

413. B. Nitrous oxide

N2O:

- N2O exchanges with N2 in any air containing cavity in the body.
- Due to differential blood: gas partition coefficients of N2O and N2, N2O will enter the cavity faster than N2 escapes
- So N2O increases the volume or pressure in this cavity

Examples:

- A Pneumothorax
- An obstructed middle ear
- An air embolus
- An obstructed loop of bowel
- An intraocular air bubble
- A pulmonary bulla
- Intracranial air

AVOID N2O in the above conditions

Thus, B is correct. Ref: GG

414. Long term use of pethidine is avoided because a metabolite of pethidine is associated with

A. Constipation
B. Seizures
C. Dependence
D. Respiratory depression

415. Which of the following opioid analgesic acts primarily through Opioid receptors?

A. Pethidine B. Methadone
C. Buprenorphine D. Pentazocine

416. Use of morphine should be avoided in au of the following patients EXCEPT?

A. Elderly male patients
B. Bronchial asthma patients
C. Ischemic heart disease patients
D. Biliary colic patients

417. The rationale for using ethanol in methanol poisoning is that is

A. Inhibits the metabolism of methanol and generation of toxic metabolite
B. Stimulates the metabolism of methanol and reduces its blood level
C. Antagonises the actions of methanol
D. Replenishes the folate stores depleted by methanol

418. Disulfiram (Antabuse) is used for the treatment of

A. Acute alcoholic intoxication
B. Both physically and psychologically dependent alcoholics
C. Alcoholics psychologically but not physically dependent on alcohol
D. Both (a) and (b) are correct

419. The intense craving experience by the people recovering from chronic alcoholism can be treated by a drug which acts by being an

A. Antagonist of opioid receptors
B. Agonist of alpha adrenoceptor
C. Agonist of beta adrenoceptor
D. Agonist of serotonin receptors

420. The combination of alcohol and disulfiram results in nausea and hypotension as a result of accumulation of

A. Methanol
B. Acetate
C. Acetaldehyde
D. NADH

421. A 45-year-old male, Sanjeev was brought to the emergency with severe agitation and aggressive behavior. He was started a haloperidol and the patient became responsive and cooperative. After 8 days of treatment, he developed his grade fever, diarrhea, confusion and muscle rigidity. Which of the following should be used for the treatment of this conditions?

A. Diazepam
B. Dantrolene
C. Benzhexol
D. High dose of haloperidol

422. A 46-year-old male, Prabash being treated for depression was admitted to the emergency with severe confusion and hallucinations. His mouth was dry and his face was flushed. On examination, his blood pressure was found to be 84/62 mmHg and his heart rate is 108 beats per minute. ECG of the patient reveals sinus tachycardia, prolongation of PR and QT interval and widened QRS complex. Which of the following agents would be best correct this patient's cardiac abnormalities?

A. Propanolol
B. Sodium bicarbonate
C. Atropine
D. Flumazenil

414. b	415. d	416. c	417. a	418. c	419. a	420. c	421. b	422. b

423. After starting your patient on imipramine, his heart rate rises to 120/min and he has blurred vision. These effects can be explained by the fact imipramine

A. Is a ganglionic blocker
B. Potentiates epinephrine
C. Is a muscarinic antagonist
D. Is a potent a-adrenergic blocker

424. A hypertensive patient Sattu already receiving a drug 'X' to control his BP was prescribed a tricyclic antidepressant. This resulted in the abolition of the antihypertensive action of 'X'. Which of the following drug can be 'X'?

A. Enalapril B. Diltiazem
C. Atenolol D. Clonidine

425. A patient Ashwani has been brought to the hospital with non-stop talking, singing, uncontrollable behavior and apparent loss of contact with reality. You diagnose it to be a case of acute mania. Which of the following is the most suitable drug for rapid control of his symptoms?

A. Haloperidol
B. Phenobarbitone
C. Lithium carbonate
D. Valproic Acid

426. A patient present in your psychiatry OPD with complaints of diminished vision. Ophthalmological examination revealed corneal and lenticular opacities. He had been prescribed some antipsychotic drug during his last visit. Which of the following it can be?

A. Flupenthixol B. Haloperidol
C. Thioridazine D. Pimozide

427. A patient Manoj with severe pain thought to be of gastrointestinal origin received 60 mg of meperidine subsequent to which he developed reaction characterized by tachycardia, hypertension, hyperpyrexia and seizures. He gave the history that he is also taking some medicine for his psychiatric condition. Which of the following drug can be held responsible for this sort of reaction?

A. Alprazolam B. Phenelzine
C. Lithium D. Imipramine

428. A patient Ravan having depressive disorder has taken 25 times the normal dose of amitriptyline. Which of the following is not likely to be observed in this patient?

A. Coma and shock
B. Pinpoint pupil
C. Hypotension
D. Hot dry skin

429. MAO inhibitors patient are contraindicated in all the following conditions EXCEPT

A. With tricyclic antidepressants
B. With indirectly acting sympathomimetic
C. Aspirin
D. Cheese

430. Which of following statements about extrapyramidal effects of antipsychotic drugs is FALSE?

A. Caused by blockade of dopamine receptors
B. Less likely to be produced by clozapine than by chlorpromazine
C. Can be counteract to some degree by ant muscarinic drugs
D. Haloperidol does not cause extrapyramidal syndrome

431. All of the following are limitations of typical tricyclic antidepressants EXCET

A. Low oral bioavailability
B. Narrow safety margin
C. Frequent side effects
D. Long latent period for response

432. An antidepressant drug which is known to have both high sedative and anticholinergic activity is

A. Phenalgine B. Trazodone
C. Fluoxetine D. Amitriptyline

423 c	424. d	425. a	426. c	427. b	428. b	429. c	430. d	431. a
432. d								

433. Which of the following drugs is preferred for long term treatment of severe anxiety disorder with intermittent panic attacks?

A. Phenothiazine
B. Selective serotonin reuptake inhibitor
C. P blocker
D. Azapirone

434. All of the following statement» about buspirone are incorrect EXCEPT?

A. It interacts with benzodiazepine receptor as an inverse agonist
B. It has anxiolytic but no anticonvulsants or muscle relaxant property
C. It produces physical dependence and suppresses barbiturate withdrawal syndrome
D. It is a rapidly acting anxiolytic: good for panic states

435. Propanolol is useful in the management of which of the following side effects of a typical neuroleptic?

A. Parkinsonism
B. Akathisia
C. Tardive dyskinesia
D. Acute muscle dystonia

436. The secretion of which of the following hormones increases with chlorpromazine therapy?

A. Corticotropin
B. Gonadotropin
C. Prolactin
D. Antidiuretic hormone

437. AU actions of chlorpromazine are based on its anti-dopaminergic property EXCEPT

A. Hypotensive
B. Hyperprolactinemic
C. Antiemetic
D. Antipsychotic

438. An adverse effect of neuroleptic drugs is directly correlated positively to the antipsychotic potency of the different compounds. Which of the following is it?

A. Sedation
B. Lowering of seizure threshold
C. Postural hypotension
D. Extrapyramidal motor disturbances

439. Which of the following effects is unlikely to occur during treatment with imipramine?

A. Sedation
B. Mydriasis
C. Elevation of seizure threshold
D. Urinary retention

440. Which of the following drugs has a high affinity for 5-HT/receptors in the brain, does not cause extrapyramidal dysfunction or hepatotoxicity, and is reported to increase the risk of significant QT prolongation?

A. Ziprasidone B. Clozapine
C. Olanzapine D. Chlorpromazine

441. Which of the following drugs is both effective and safe to use in a pregnant patient suffering from bipolar disorder?

A. Olanzapine
B. Lithium
C. Carbamazepine
D. Valproic acid

442. Which of the following will you like to give to a pregnant patient to decrease the risk of neural tube defects in the offspring & if your patient is receiving antiepileptic drugs?

A. Vitamin E B. Vitamin A
C. Folic acid D. Pyridoxine

443. An antiepileptic drug 'A' can also be used for the treatment of post-herpetic neuralgia and pain due to diabetic neuropathy. Which of the following can be the agent 'A'?

A. Carbamazepine
B. Primidone
C. Lamotrigine
D. Gabapentin

433 b	434. b	435. b	436. c	437. a	438. d	439. c	440. a	441. a
442. c	443. d							

444. A young male, Farhan suffers from a seizure disorder which is characterized by tonic rigidity of limbs followed in 20-30 sec by tremors progressing to massive jerking of the body. This clonic phase lasts for 1-3 min. The anti-seizure drug of choice for this patient is

A. Clonazepam
B. Valproic acid
C. Fosphenytoin
D. Ethosuximide

445. Raju, a 10-year-old boy is having difficulty in learning at school. He has short lapses of awareness with eyelid fluttering that occur every 5-10 minutes. EEG studies reveal brief 3 Hz spike and wave discharges appearing synchronously in all the leads. Which of the following drugs would be effective but has the disadvantage that it causes sedation and tolerance?

A. Diazepam
B. Clonazepam
C. Ethosuximide
D. Valproic acid

446. Status epilepticus is managed best with the use of which of the following drugs?

A. Intramuscular phenobarbitone
B. Intravenous phenytoin sodium
C. Intravenous diazepam
D. Rectal diazepam

447. A patient, Rama was diagnosed to be having febrile commissions in the pediatric emergency. which of the following can be used for the treatment of this patient?

A. Rectal diazepam
B. Intravenous phenytoin
C. Intramuscular phenobarbitone
D. Oral sodium valproate

448. The most common adverse effect particularly seen in young children because of the use of sodium valproate is

A. Anorexia
B. Loss bf hair
C. Hepatitis
D. Tremor

449. The drug used in absence seizures and having a narrow spectrum of antiepileptic activity is

A. Lamotrigine
B. Primidone
C. Sodium valproate
D. Ethosuximide

450. High plasma drug concentration of phenytoin can cause which of the following adverse effects?

A. Gum hyperplasia
B. Hirsutism
C. Ataxia
D. All of the above

451. Phenytoin pharmacokinetics is highlighted by which of the following characteristics?

A. Capacity limited metabolism saturating at higher therapeutic concentration range
B. Nonsaturation kinetics of metabolism
C. High first pass metabolism
D. Extrahepatic metabolism

452. Which of the following statements about vigabatrin is TRUE?

A. Blocks neuronal reuptake of GABA
B. Drug of choice in absence seizures
C. Visual disturbances can occur
D. Lift threatening skin disorders may occur

453. A patient of parkinsonism, Mr. Ghai noticed that the therapeutic effect of levodopa decreased when he was given another drug by his physician but no interaction was seen when he switched over to levodopa-carbidopa combination. The possible drug prescribed by Ms. physician can be

A. Metoclopramide
B. Isoniazid
C. Chlorpromazine
D. Vitamin B complex

444 b	445. b	446. c	447. a	448. c	449. d	450. c	451. a	452. c	453. d

454. A compound X decreases the functional activities of several CNS neurotransmitters including dopamine, adrenaline and serotonin at high doses it may cause Parkinsonism like extrapyramidal system dysfunction. Which of the following can be X?

A. Reserpine B. Diazepam
C. Ketamine D. Baclofen

455. Which statement is CORRECT about Pramipexole?

A. Activates brain dopamine receptors
B. Commonly a first line therapy for Parkinson's disease
C. Not an ergot derivative
D. All of the above

456. Which of the following antiparkinsonian drugs directly activates dopaminergic D2 receptors in the striatum?

A. Benserazide
B. Entacapone
C. Pramipexole
D. Selegiline

457. Which of the following adverse effects of levodopa is not minimized even after combining it with carbidopa?

A. On-off effect
B. Nausea and vomiting
C. Cardiac arrhythmia
D. Involuntary movements

458. Entacapone may be useful in patients being treated with levodopa carbidopa combination because it.

A. Activates COMT
B. Inhibits dopamine uptake
C. Inhibits monoamine oxidase type B
D. Decreases formation of 3-OMD

459. A 40 years old patient with liver dysfunction is scheduled for a surgical procedure. Lorazepam can be used for pre-anesthetic medication in this patient without concern for excessive CNS depression because the drug is

A. Selective anxiolytic like buspirone
B. Forming several active metabolites
C. Reversible by administration of naloxone
D. Conjugated directly

460. A very potent and short acting benzodiazepine was given to a patient Kallu for the purpose of causing hypnosis but the drug caused psychiatric disturbances in Mm. Which of the following can be the hypnotic used?

A. Triazolam
B. Nitrazgpam
C. Temazepam
D. Flurazepam

461. Which of the following hypnotic drugs facilitates the inhibitory actions of GABA but lacks anticonvulsant or muscle relaxing properties and has minimal effect on sleep architecture?

A. Buspirone
B. Zaleplon
C. Phenobarbital
D. Diazepam

462. Flumazenil can reverse the respiratory depression caused by which of the following?

A. Midazolam B. Ketamine
C. Fentanyl D. Propofol

463. Which of the following statements regarding barbiturates is accurate?

A. Alkalization of the urine will accelerate the elimination of phenobarbital
B. Barbiturates may increase the half-lives of drugs metallized by the liver
C. Benzodiazepines exhibit a steeper dose response relationship as compared to barbiturates
D. Respiratory depression caused by barbiturate over dosage can be reversed by flumazenil

454 a	455. d	456. c	457. d	458. d	459. d	460. a	461. b	462. a
463. a							

464. In strychnine poisoning, convulsions occur because of the antagonist effects at receptors for.

A. Aspartate
B. Glutamate
C. GABA
D. Glycine

465. An i.v., bolus dose of Thiopentone leads to loss of consciousness within 10-15 sec, the patient regains consciousness in just a few minutes. This is because it is

A. Redistributed from brain Lo other body tissues
B. Exhaled rapidly
C. Rapidly metabolized by hepatic enzymes
D. Renally excreted

464 d | 465. a

414. **B. Seizures**

Pethidine is mainly metabolized by hydrolysis to meperidinic acid but a minor pathway of metabolism involving methylation to nor-pethidine is also present.

In overdose of pethidine, this minor pathway assumes importance and there is accumulation of nor-pethidine. This compound possesses excitatory properties and can lead to tremors, mydriasis, delirium, myodonus and convulsions.

Thus, option B is correct. Ref: KDT, Topic: opioids

415. **D. Pentazocine**

Pentazocine can cause dysphoric reactions (hallucinations) by stimulating the Ic receptors.

Thus, option D is correct. Ref: KDT, Topic: opioids

416. **C. Ischemic heart disease patients**

- Morphine is used for the treatment of myocardial infarction (ischemic heart disease) and LVF.
- Morphine is contra-indicated in extremes of age i.e., very young and elderly persons.
- It is also contra-indicated in bronchial asthma because it can cause respiratory depression and worsen the condition.
- By increasing intrabiliary pressure, morphine can worsen the pain of biliary colic.

Thus, option C is correct. Ref: KDT, Topic: opioids

417. **A. Inhibits the metabolism of methanol and generation of toxic metabolite**

- Methanol produces toxic metabolites (formaldehyde and formic acid) that are responsible for blindness. This metabolism takes place with the help of and aldehyde dehydrogenase.

Alcohol	Aldehyde
Methanol	Formaldehyde
Formic Acid dehydrogenase	dehydrogenase

- Ethanol is also metabolized by the same enzymes to produce acetaldehyde and acetic acid. It competes with methanol for above enzymes and inhibits the generation of toxic formaldehyde and formic acid.

Thus, option A is correct. Ref: KDT, Topic: Alcohols

418. **C. Alcoholics psychologically but not physically dependent on alcohol**

If a patient is physically dependent on alcohol, disulfiram can precipitate severe withdrawal symptoms. It is therefore, not indicated for physically alcoholics.

Thus, option C is correct. Ref: KDT, Topic: Alcohols

419. **A. Antagonist of opioid receptors**

Naltrexone is used to decrease the craving for alcohol after de-addiction.

Thus, option A is correct. Ref: KDT, Topic: Alcohols

420. **C. Acetaldehyde**

Disulfiram is an aldehyde dehydrogenase inhibitor that can be used for de-addiction of chronic alcoholics.

Alcohol	Aldehyde
Ethyl alcohol	Acetaldehyde
	Acetic acid
dehydrogenase	dehydrogenase

Due to inhibition of aldehyde dehydrogenase, there is accumulation of acetaldehyde that leads to several distressing symptoms (which strengthens the resolution of a person to quit alcohol).

Thus, option C is correct. Ref: KDT, Topic: Alcohols

421. B. Dantrolene

Diagnosis in this patient is neuroleptic malignant syndrome (NMS). It is an adverse effect caused by typical antipsychotic drugs like haloperidol. It presents clinically with four primary features: (1) hyperthermia, (2) extreme generalized rigidity, (3) autonomic instability, and (4) altered mental status.

Dantrolene is drug of choice for this condition.

Thus, option B is correct. Ref: Katzung 14E/P 499 Topic: Skeletal muscle relaxants

422. B. Sodium bicarbonate

Tricyclic anti-depressants (TCAs) can have quinidine-like effect on the cardiac conduction system, potentially causing QRS and QT prolongation and cardiac. These effects are due to inhibition of fast sodium channels. NaHCO3 can correct QRS prolongation, reverse hypotension, and treat ventricular

Dysrhythmias. Sodium bicarbonate is the single most effective agent in treating TCA-associated cardiac abnormalities.

Thus, option B is correct. Ref: Katzung 14E/P 525; Topic: antidepressants

423. C. Is a muscarinic antagonist

These symptoms are of anticholinergic drugs. Tricyclic antidepressants have powerful anticholinergic properties and can lead to these symptoms.

Thus, option C is correct. Ref: KDT, Topic: antidepressants

424. D. Clonidine

TCAs abolish the antihypertensive effect of Guanethidine and clonidine by inhibiting their transport into the adrenergic neurons.

Thus, option D is correct. Ref: KDT, Topic: centrally acting skeletal muscle relaxants

425. A. Haloperidol

- Antipsychotic drugs like olanzapine and haloperidol are agents of choice for rapid control of symptoms in acute mania.
- Lithium is the drug of choice for the treatment of bipolar disorder (MDP) and prophylaxis of mania.

Thus, option A is correct. Ref: KDT, Topic: antipsychotics

426. C. Thioridazine

Retinal degeneration and corneal and lenticular opacities are the adverse effects seen most commonly with the use of Thioridazine.

Thus, option C is correct. Ref: KDT, Topic: antipsychotics

427. B. Phenelzine

Meperidine (pethidine) is metabolized mainly to meperidinic acid (inactive) by MAO inhibitors. Minor pathway is conversion to nor-meperidine (possesses excitatory properties and shows cumulation)

- MAO inhibitors like phenelzine inhibits the major pathway; therefore, minor pathway assumes importance resulting in generation of nor-pethidine that can cause seizures.
- Long term use of meperidine can result in accumulation of nor-meperidine and thus seizures can occur.

Thus, option B is correct. Ref: KDT, Topic: antipsychotics

428. B. Pinpoint pupil

Amitriptyline is a TCA like imipramine. It causes mydriasis due to anticholinergic activity. Other adverse effects are also similar to imipramine.

Thus, option B is correct. Ref: KDT, Topic: antidepressants

429. C. Aspirin

In first three conditions mentioned in the question, MAO inhibitors will lead to hypertensive crisis but these drugs do not interact with aspirin.

Thus, option C is correct. Ref: KDT, Topic: antidepressants

430. D. Haloperidol does not cause extrapyramidal syndrome

Extrapyramidal adverse effects of antipsychotic drugs are due to blockade of dopamine receptors. These are less often seen with atypical antipsychotics

like e and risperidone (and more often with classical drugs like haloperidol and chlorpromazine). These effects can be treated with central anticholinergic drugs like benztropine and trihexiphenidyl

Thus, option D is correct. Ref: KDT, Topic: antipsychotics

431. A. Low oral bioavailability

- TCAs have very good oral absorption
- These agents have narrow therapeutic index and thus low safety margin.
- Sedation and anticholinergic adverse effects are seen frequently with the use of TCAs.
- Antidepressant actions of both TCAs as well as SSRIs take several weeks to manifest.

Thus, option A is correct. Ref: KDT, Topic:

432. D. Amitriptyline

Tricyclic antidepressants (TCA) possess anticholinergic and sedative properties. Amitriptyline and tryptamine possess highest sedative and ant muscarinic actions.

Thus, option D is correct. Ref: KDT, Topic: antipsychotics

433. B. Selective serotonin reuptake inhibitor

SSRIs are the drugs of choice for long-term Management of panic disorder whereas benzodiazepines are DOC for acute panic attacks.

Thus, option B is correct. Ref: KDT, Topic: antipsychotics

434. B. It has anxiolytic but no anticonvulsants or muscle relaxant property

- Buspirone is a $5HT_{1A}$ agonist useful for the treatment of anxiety.
- Unlike benzodiazepines, it is non-sedative anti-anxiety drug.
- Due to delay in the onset of its action, it is used for the treatment of chronic anxiety and is ineffective in acute panic attacks.
- Buspirone lacks anticonvulsant and muscle relaxing property.

Thus, option B is correct. Ref: KDT, Topic: antipsychotics

435. B. Akathisia

Treatment of various extrapyramidal symptoms is as follows:

Symptom	Drug of Choice
1. Muscular dystonia	Central anticholinergic (e.g. Benzhexol)
2. Parkinsonism	Central anticholinergic (e.g. Benzhexol)
3. Akathisia	Propanolol
4. Malignant neuroleptic syndrome	Dantrolene
5. Tardive dyskinesia	No specific treatment (central anticholinergics are contraindicated)

Thus, option B is correct. Ref: KDT, Topic: antipsychotics

436. C. Prolactin

Dopamine acts like prolactin releasing inhibitory hormone. D, blockers decrease the action of dopamine and can result in hyperprolactinemia. Some drugs blocking D2 receptors are:

- Antipsychotics like chlorpromazine
- Metodopramide

Thus, option C is correct. Ref: KDT, Topic: antipsychotics

437. A. Hypotensive

- Chlorpromazine is a typical antipsychotic (D, blocker) with anticholinergic and a-blocking properties.
- D, blockade is also responsible for extrapyramidal symptoms and hyperprolactinemia (dopamine acts like prolactin release inhibitory hormone).
- Antiemetic effect of chlorpromazine is due to blockade of D2 receptors in CTZ.
- Anticholinergic effects manifest as dry mouth, blurring of vision and urinary retention.
- Hypotension and impaired ejaculation may be seen due to a-blocking activity of chlorpromazine.

Thus, option A is correct. Ref: KDT, Topic: antipsychotics

438. D. Extrapyramidal motor disturbances

- Antipsychotic potency of typical antipsychotic drugs is related to their 132 receptor blocking action.
- D2 blocking action is also responsible for extrapyramidal adverse effects like muscle dystonia and Parkinsonism etc.

Thus, option D is correct. Ref: KDT, Topic: antipsychotics

439. C. Elevation of seizure threshold

Imipramine is a tricyclic antidepressant. It inhibits the reuptake of serotonin and nor-adrenaline. In addition, it possesses anticholinergic and a-blocking are:

- Increased 'risk of seizures due to lowering of seizure threshold is an adverse effect of this drug.

Thus, option C is correct. Ref: KDT, Topic: antidepressants

440. A. Ziprasidone

- Clozapine, olanzapine and ziprasidone are atypical antipsychotic agents that act by blocking SHT, receptors.
- Chlorpromazine is a typical antipsychotic drug. It blocks D2 receptors in the brain and can cause extrapyramidal symptoms.
- Major adverse effect of clozapine is agranulocytosis (hematotoxic) and seizures.
- Olanzapine causes weight gain.
- Ziprasidone can cause QT prolongation leading to torsades de pointes.

Thus, option A is correct. Ref: KDT, Topic: antipsychotics

441. A. Olanzapine

All of these drugs can be used for the treatment of bipolar disorder but carbamazepine, lithium and Valproic acid are teratogenic. Olanzapine is a safe in pregnancy.

Thus, option A is correct. Ref: KDT, Topic: antipsychotics

442. C. Folic acid

Folic acid is administered to prevent the development of neural tube defects in the baby.

Risk of neural tube defects is increased with the use of Valproic acid in pregnancy.

Thus, option C is correct. Ref: KDT, Topic: antiepileptics

443. D. Gabapentin

Gabapentin and progabide act by increasing the release of GABA.

Gabapentin is the drug of choice for post-herpetic neuralgia and diabetic neuropathy.

Thus, option D is correct. Ref: KDT, Topic: antiepileptics

444. B. Valproic acid

Diagnosis of this patient is generalized tonic clonic seizure (GTCS) or grand mal epilepsy. Drug of choice for this condition is Valproic acid.

Thus, option B is correct. Ref: Harrison 16E/P 2367; Topic: antiepileptics

445. B. Clonazepam

- Diagnosis of the patient is petit mal epilepsy (absence seizures). Drugs effective against absence seizures are:
  - Ethosuximide

Valproate

  - Clonazepam
  - Lamotrigine
- Clonazepam is a benzodiazepine that can cause sedation and tolerance.

Thus, option B is correct. Ref: KDT, Topic: antiepileptics

446. C. Intravenous diazepam

- Benzodiazepines like diazepam and lorazepam are fast acting anti-seizure drugs and can be used to abort the seizures in status epilepticus.
- Lorazepam is the drug of choice for status epilepticus.

Thus, option C is correct. Ref: KDT, Topic: antiepileptics

447. A. Rectal diazepam

Diazepam is the drug of choice for febrile convulsions. It is administered intravenously. If i.v. access is not possible, rectal diazepam can be used.

Thus, option A is correct. Ref: KDT, Topic: antiepileptics

448. C. Hepatitis

Sodium valproate is contra-indicated in children less than 3 years due to risk of hepatitis.

Thus, option C is correct. Ref: KDT, Topic: antiepileptics

449. D. Ethosuximide

- Ethosuximide is useful only in the treatment of absence seizures (petit mal epilepsy).
- Valproic acid and lamotrigine are broad spectrum antiepileptic drugs.

Thus, option D is correct. Ref: KDT, Topic: antiepileptics

450. C. Ataxia

Cerebellar dysfunction (ataxia, nystagmus and vertigo) is seen at toxic plasma concentrations whereas hirsutism and gum hyperplasia is seen at therapeutic concentrations (but on prolonged use).

Thus, option C is correct. Ref: KDT, Topic: antiepileptics

451. A. Capacity limited metabolism saturating at higher therapeutic concentration range

Phenytoin follows zero order kinetics at high plasma concentration due to saturation of metabolic pathways.

Thus, option A is correct. Ref: KDT, Topic: antiepileptics

452. C. Visual disturbances can occur

- Vigabatrin act by inhibiting the enzyme GABA transaminase (involved in breakdown of GABA).
- It is used for the treatment of partial and generalized seizures. It is also used to treat infantile spasms.
- Visual disturbances are very important adverse effect of this agent.

Thus, option C is correct. Ref: KDT, Topic: antiepileptics

453. D. Vitamin B complex

- Pyridoxine is a component of vitamin B complex.
- Pyridoxine is a cofactor for the enzyme, dopa decarboxylase and therefore, administration of vitamin B complex can stimulate the activity of this enzyme.
- Dopa decarboxylase converts levo-dopa to dopamine. Increased formation of dopamine in the periphery is undesirable because it cannot cross blood brain barrier. Therefore, stimulation of dopa decarboxylase decreases the therapeutic effect of 1-dopa.
- If the enzyme, dopa decarboxylase is already inhibited with carbidopa, there will be no interaction with pyridoxine.

Thus, option D is correct. Ref: KDT, Topic: antiepileptics

454. A. Reserpine

Neurotransmitters (like dopamine, serotonin and adrenaline) are stored in the vesicles after their synthesis. These stores of neurotransmitters are released on stimulation of the neuron. Reserpine inhibits the vesicular transport of these neurotransmitters resulting in depletion of dopamine, serotonin and adrenaline.

Severe depression (due to deficiency of serotonin) leading to suicidal tendencies and extrapyramidal symptoms (due to deficiency of dopa-mine in the brain) are the adverse effects of this drug.

Thus, option A is correct. Ref: KDT, Topic: antidepressants

455. D. All of the above

Pramipexole and Ropinirole are newer non-ergot dopamine agonists. Now, these are first choice drugs for the treatment of Parkinsonism (preferred over Levo-dopa)

Thus, option D is correct. Ref: KDT, Topic: parkinsons disease

456. C. Pramipexole

Directly acting D, receptor agonists can be

- Ergot derivatives e.g. bromocriptine and pergolide

- Non-ergot compounds e.g. Pramipexole and Ropinirole

Thus, option C is correct. Ref: KDT, Topic: parkinsons disease

457. D. Involuntary movements

Carbidopa can decrease all the adverse effects of levodopa except

- Involuntary movements
- Behavioral effects

Thus, option D is correct. Ref: KDT, Topic: parkinsons disease

458. D. Decreases formation of 3-OMD

- Levo-dopa is converted to dopamine by dopa decarboxylase (that cannot cross blood brain barrier).
- Carbidopa is an inhibitor of dopa decarboxylase in the periphery. It therefore increases the amount of 1-dopa that reaches the brain (due to inhibition of peripheral metabolism to dopamine).
- Due to inhibition of 1-dopa metabolism (by dopa decarboxylase), an alternative pathway of metabolism by catechol-o-methyl transferase (COMT) is activated.
- COMT metabolizes 1-dopa to 3-o-methyl dopa (3-0MD) that can complete with-l-dopa for entry in the brain.
- Entacapone and tolcapone is useful in Parkinsonism by inhibiting COMT.

Thus, option D is correct. Ref: KDT, Topic: parkinsons disease

459. D. Conjugated directly

Lorazepam and oxazepam are the benzodiazepines which are excreted from the body by glucuronide conjugation without phase 1 metabolism in the liver. So these can be used safely in hepatic dysfunction.

Thus, option D is correct. Ref: Katzung 14E Topic : sedative hypnotics

460. A. Triazolam

Triazolam is a very potent BZD with ultra-rapid elimination. Some cases of paranoia and psychiatric disturbances have been noted with this drug.

Thus, option A is correct. Ref: KDT, Topic: sedative hypnotics

461. B. Zaleplon

- Zolpidem, zaleplon and zopiclone are agonists at BZD receptors.
- These are hypnotic drugs that lack muscle relaxant and anticonvulsant actions.
- These have negligible effect on REM sleep and do not affect sleep architecture.

Thus, option B is correct. Ref: KDT, Topic: sedative hypnotics

462. A. Midazolam

Flurnazenil is an antagonist of benzodiazepine receptors and is used to prevent respiratory depression due to benzodiazepines (like midazolam).

Thus, option A is correct. Ref: KDT, Topic: sedative hypnotics

463. A. Alkalization of the urine will accelerate the elimination of phenobarbital

- Barbiturates are acidic drugs. These are ionized in the alkaline urine and thus cannot be reabsorbed. Alkalization of urine can be used to accelerate the elimination of barbiturates in poisoning.
- Other differences between benzodiazepines and barbiturates include.

Benzodiazepines	Barbiturates
GABA facilitatory	GABA mimetic as well as facilitatory
Increase frequency of opening of channels	Increase duration of opening of Cl- channels.
Less addictive potential	Highly addictive
Less toxic due to flat DRC	Highly toxic due to steep DRC
Specific antidote flumazenil is present	No specific antidote
No drug interactions	Decrease the half-life of many drugs due to microsomal enzyme inducing property.

Thus, option A is correct. Ref: KDT, Topic: sedative hypnotics

464. D. Glycine

- GABA is the principal inhibitory neurotransmitter in the brain and glycine is the inhibitory amino acid in the spinal cord.
- By antagonizing the glycine receptors, strychnine can result in convulsions and other stimulatory symptoms.

Thus, option D is correct. Ref: KDT, Topic: sedative hypnotics

465. A. Redistributed from brain Lo other body tissues

Thiopentone and other highly lipid soluble agents first reach the highly perfused organs like, brain. Therefore, onset of action of these agents is very However, action also terminates quickly because of redistribution to less well perfused tissues like fat and muscle.

Thus, option A is correct. Ref: KDT, Topic: sedative hypnotics

466. True statement about trimetazidine is

A. It is an inhibitor of fatty acid oxidation
B. It improves tissue perfusion by modifying rheological property of blood
C. It is a novel sodium channel blocker
D. Both (a) and (b) are correct

467. Propanolol is contraindicated in a patient of angina pectoris who is already receiving

A. Nifedipine
B. Aspirin
C. Isosorbide mononitrate
D. Verapamil

468. All of the following statements about amlodipine are true except

A. It has a very long elimination half life
B. It has a very large volume of distribution
C. It undergoes very in the first pass metabolism and possess high and consistent oral bioavailability
D. It acts by conversion to an active metabolite in the liver

469. Which of the following drugs is most likely to precipitate angina?

A. Amlodipine B. Verapamil
C. Diltiazem D. Nifedipine

470. Concomitant administration of the drug with organic Nitrates is contra-indicated due to marked potentiation of vasodilatory action leading to pro-found hypotension. This drug is

A. Propanolol
B. Sildenafil
C. Hydrochlorothiazide
D. Fluoxetine

471. Organic nitrates can lead to the development of tolerance when used develop tolerance is least likely to

A. Sustained release oral nitroglycerine
B. Oral Pentaerythritol tetranitrate
C. Transdermal nitroglycerine
D. Sublingual nitroglycerine

472. Nitroglycerine exerts beneficial effects in classical angina pectoris primarily by

A. Reduction of cardiac preload
B. Redistribution of coronary blood flow
C. Increase in total coronary blood Row
D. Reduction of cardiac after load

473. Which of the following statements best explains the action of nitroglycerine on coronary vessels

A. It migrates angina pectoris by increasing total coronary Flow
B. It mainly decreases the after load
C. It preferentially dilates auto regulatory arterioles without affecting the larger arteries
D. It preferentially dilates conducting arteries without affecting resistance arterioles

474. The drug effective for treatment as well as prophylaxis of angina pectoris is

A. Diltiazem
B. Pentaerythritol tetra nitrate
C. Isosorbide dinitrate
D. Dipyridamole

475. Which of the following is an active metabolite of another drug and is available as a separate drug for the treatment of angina?

A. Nitroglycerine
B. Isosorbide dinitrate
C. Isosorbide Mononitrate
D. Propanolol

466 a	467. d	468. d	469. d	470. b	471. d	472. a	473. d	474. c
475. c								

476. **Verapamil is associated with all of the following except?**

A. Hyperglycemia
B. Bradycardia
C. Constipation
D. Increased PR interval

477. **You decide not to prescribe sildenafil in a patient because the patient told you that he is taking an antianginal dug. Which of the following can it be?**

A. Organic nitrates
B. B adrenergic blockers
C. Calcium channel blocker
D. Angiotensin converting enzyme inhibitors

478. **A 40-year old politician suffered from attacks of chest pain diagnosed as angina pectoris. He had a tense personality, resting heart rate was 96 min blood pressure 17qR04mm Hg but blood sugar level and lipid profile were normal. Select the most suitable antihypertensive for the initial therapy in his case**

A. Atenolol
B. Hydrochlorothiazide
C. Nifedipine
D. Methyldopa

479. **Devraj is working as a CEO in a airlines company. He has a traveling job. He is a known diabetic controlled on oral hypoglycemic drugs. On his recent visit to the doctor, his blood pressure was found to be 164/102 mm Hg. Most suitable drug for this patient should be?**

A. Propanolol
B. Hydrochlorothiazide
C. Clonidine
D. Enalapril

480. **A patient, amir is admitted to the emergency with severe bradycardia following drug overdose. The concerned drug was being taken for hypertension. Which of the following cannot be the drug?**

A. Clonidine B. Reserpine
C. Propanolol D. Hydralazine

481. **A patient has been prescribed a drug A by a doctor for treating his hypertension. This drug can cause tachycardia and marked fluid retention. Which of the following can be the drug A?**

A. Captopril B. Guanethidine
C. Metoprolol D. Minoxidil

482. **In which of the following patients would Enalapril be the best first line agent for high blood pressure control?**

A. A 62-year-old man with renal artery stenosis
B. A 56-year-old diabetic woman
C. A 32-year-old pregnant female
D. A 41-year-old woman with hyperkalemia

483. **When treating hypertension chronically, orthostatic hypertension is maximum with**

A. Clonidine B. Prazosin
C. Propanolol D. Guanethidine

484. **Which of these antihypertensive Do NOT have any central action?**

A. Propanolol B. Methyldopa
C. Prazosin D. Clonidine

485. **Which antihypertensive is a prodrug and is converted to its active form in brain**

A. Clonidine B. Minoxidil
C. Methyldopa D. Nitroprusside

486. **All of the following antihypertensive drugs increase plasma renin activity except**

A. Hydralazine B. Nifedipine
C. Captopril D. Clonidine

487. **Clonidine is used as an antihypertensive agent but if used as a fast intravenous injection, it can increase the blood pressure due to**

A. Stimulation of vasomotor center
B. Agonistic action on vascular a2 adrenergic receptors
C. Release of noradrenaline from adrenergic nerve endings
D. Cardiac stimulation

476 a	477. a	478. a	479. d	480. d	481. d	482. b	483. d	484. c
485. c	486. d	487. b						

488. Mr. Rushil has severe hypertension and is to receive minoxidil. Minoxidil is a powerful arteriolar vasodilator that does not act on autonomic receptor. When used in severe hypertension its effects would probably include

A. Tachycardia and decreased cardiac output
B. Decreased mean arterial pressure and decreased cardiac contractility
C. Tachycardia and increased cardiac contractility
D. Decreased mean arterial pressure and increased salt and water excretion by the kidney

489. Which of the following is true regarding Enalapril treatment in patients of essential hypertension

A. Deceased concentration of renin in the blood
B. Decreased sodium and increases potassium in the urine
C. Decreased angiotensin II concentration in the blood
D. All of tile above

490. A patient Vipin has been taking digoxin for several years and is about to receive atropine for other indication. A common side effect digoxin that can be blocked by atropine is

A. Deceased appetite
B. Increased cardiac contractility
C. Tachycardia
D. Increased PR interval on the ECG

491. Which of the following is not given in acute severe digitalis toxicity?

A. Digibind B. Lignocaine
C. Potassium D. None of these

492. Mechanism of action of digitalis in atrial fibrillation is

A. By decreasing cardiac contractility
B. Increase in Refractoriness of AV nodal tissue
C. Na^+ K^+ ATPase inhabitation
D. By causing Bradycardia

493. Which of the following is NOT true about the use of B blockers in CHF

A. These should be started at very low dose and slowly titrated upwards
B. Carvedilol is most widely used B blocker
C. These can reduce mortality in CHF patients
D. These are drug of choice in acute decompensated heart failure

494. Which of these drugs NOT decrease angiotensin II activity

A. Enalapril B. Nesiritide
C. Valsartan D. Omapatrilat

495. All of the following statements about the use of spironolactone in CHF are true except

A. It affords rapid symptomatic relief in CHF patients
B. It should be administered in low doses to prevent hyperkalemia
C. It affords prognostic benefit in severe heart failure over and above that afforded by ACE inhibitors
D. It helps to overcome the Refractoriness to thiazides

496. Which of the following drugs is beneficial in a Refractory congestive heart failure by increasing cardiac contractility and decreasing preload and afterload?

A. Amrinone B. Amiloride
C. Amiodarone D. Carvedilol

497. All of the following drugs are useful for long-term treatment of congestive heart failure except.

A. Digoxin
B. Ramipril
C. Spironolactone
D. Dobutamine

498. All of the following are the actions of B-adrenoceptor blockers in CHF except

A. Decrease in mortality associated with CHF
B. Prevention of pathological remodeling of ventricular myocardium
C. Prevention of dangerous cardiac arrhythmias
D. Antagonism of vasoconstriction due to sympathetic over activity

488 c	489. c	490. d	491. c	492. b	493. d	494. b	495. a	496. a
497. d	498. d							

499. **A patient of atrial fibrillation is on digoxin therapy. Which of the following responses do you expect?**

A. Restoration of normal sinus rhythm
B. Conversion of atrial fibrillation to atrial flutter
C. Decrease in atrial fibrillation frequency but increase in ventricular rate
D. Increase in atrial fibrillation frequency, but decrease in ventricular rate

500. **Digitalis is used in the treatment of acute CHP. It can also be used as a long-term maintenance therapy if CHP is associated with**

A. Hypertension
B. Atrial fibrillation
C. Hypertrophic obstructive cardiomyopathy
D. Mitral stenosis

501. **Advantage of using digoxin in CHP is**

A. It reverses the pathological changes of UIF
B. It prolongs the survival of CHF patient
C. It is used Io provide relief of symptoms
D. All of these

502. **The most important channel of elimination of digoxin is**

A. Tubular secretion
B. Hepatic metabolism
C. Excretion in bile
D. Glomerular filtration

503. **Drugs that have been found to be useful in compensated heart failure include all of the following except.**

A. Na+ K+ ATPase inhibitors
B. Beta receptor agonists
C. Alpha blockers
D. Beta receptor antagonists

504. **Which of the following is incorrect about acetazolamide**

A. Acts on the luminal and basolateral enzymes
B. Should be avoided in sulfa drug allergy patients
C. Competitively inhibits Carbonic anhydrase in PT
D. All of the above

505. **Which of the following osmotic diuretic has long half life**

A. Glycerin B. Mannitol
C. Isosorbide D. Urea

506. **Which of the following osmotic diuretic mat cause hyperglycemia**

A. Isosorbide B. Mannitol
C. Glycerin D. Urea

507. **All are adverse effects seen with Loop diuretics except**

A. Decrease plasma levels of triglycerides
B. Hyperuricemia
C. Increase plasma levels of LDL cholesterol
D. Decrease plasma levels of HDL, Cholesterol

508. **Regarding Ototoxicity by Furosemide the false statement is :**

A. Ototoxicity occurs most frequently with rapid intravenous administration
B. The rate of furosemide infusions should not exceed 4 mg/min to avoid ototoxicity
C. Ototoxicity occurs least frequently with oral administration
D. Most ototoxic loop diuretic is ethacrynic acid

509. **Which of the following drugs is contraindicated with Spironolactone**

A. Atenolol
B. Verapamil
C. Chlorthiazide
D. Enalapril

510. **Which of the following condition Thiazide diuretics are not used**

A. Idiopathic hypercalciurea with nephrocalcinosis
B. Congestive Heart Failure
C. Hypertension
D. Hyperlipidemia

499 d	500. b	501. c	502. d	503. b	504. c	505. c	506. c	507. a
508. c	509. d	510. d						

511. Which of the following is a Diuretic

A. Conivaptan
B. Rolophylline
C. Both A and B
D. None

512. Metabolic acidosis with hypokalemia is seen with

A. Torsemide
B. Acetazolamide
C. Chlorthalidone
D. Amiloride

513. The following drugs are used in treatment of Liddle syndrome except

A. Acetazolamide
B. Triamterene
C. Spironolactone
D. None of the above

514. Which of the following aldosterone antagonist has highest oral bioavailability

A. Spironolactone
B. Potassium Canrenoate
C. Canrenone
D. Epleronone

515. Which of the following is an inhibitor of Renal Epithelial Na+ Channels

A. Triamterene
B. Spironlonolactone
C. Indapamide
D. Xipamide

516. Thiazide diuretics are known to cause hyperglycemia, which of the following ins incorrect about it

A. Thiazide diuretics decrease glucose tolerance
B. Thiazide-induced diabetes mellitus is associated with the same cardiovascular disease risk as incident diabetes
C. Hyperglycemia is due to reduced insulin secretion and alterations in glucose metabolism
D. Hyperglycemia is reduced when K^+ is given along with the diuretic

517. Following fluid and electrolyte imbalance are seen with thiazide diuretics except

A. Hypochloremia
B. Hypermagnesemia
C. Metabolic alkalosis
D. Hypercalcemia

518. Which of the following diuretic is active even when GFR is less than 30-40 mL/min

A. Chlorothiazide
B. Indapamide
C. Chlorthalidone
D. Clopamide

519. Most potent diuretic among the following diuretics is

A. Chlorthalidone
B. Hydrochlorothiazide
C. Chlorothiazide
D. Indapamide

520. Which of the following diuretic acts by inhibiting Na+-Cl symport

A. Furosemide
B. Acetazolamide
C. Spironolactone
D. Chlorthalidone

521. Loop diuretics causes 'post diuretic Na+ retention due to their short half-life, this can be overcome by

A. Restricting dietary Na+ intake
B. More frequent administration of the loop diuretic
C. Both A and B
D. Adding Potassium sparing diuretic

522. Drug not used in SIADH is

A. Demeclocycline
B. Restriction of free water intake
C. Desmopressin
D. 3% Nacl

511 c	512. b	513. c	514. b	515. a	516. b	517. b	518. b	519. d
520. d	521. c	522. c						

523. **A 30-year-old male, Rajinder presents to OPD your office with fatigue, muscle weakness and headache. His blood pressure is 179020 nun Hg and his heart rate is 100lmin. Laboratory evaluation reveals hypokalemia, metabolic alkalosis and decreased plasma renin activity. On CT scan a mass was noted on left suprarenal gland. Patient was prescribed a drug for few weeks and the symptoms subsided. Laboratory values and blood Pressure returned to normal values. The likely drug given to this patients?**

A. Clonidine
B. Spironolactone
C. Hydrochlorothiazide
D. Propanolol

524. **Which of the following agents is useful for the oral treatment of both pituitary as well as renal diabetes insipidus?**

A. Hydrochlorothiazide
B. Vasopressin
C. Chlorpropamide
D. Carbamazepine

525. **Desmopressin is a synthetic analog of ADH. It is preferred over arginine vasopressin in the treatment of diabetes insipidus for all of the following reasons EXCEPT**

A. It is a more potent antidiuretic
B. It is longer acting
C. It has a little vasoconstrictor activity
D. It is a selective vasopressin V2 receptor agonist

526. **Desmopressin can be used for all of the following conditions Except**

A. Neurogenic diabetes insipidus
B. Bleeding due to hemophilia
C. Bed wetting in children
D. Nephrogenic diabetes insipidus

527. **All of the following indication of V_2 receptor EXCEPT**

A. Esophageal varices
B. Bed wetting in children
C. von-Willebrand's disease
D. Central diabetes insipidus

528. **Vasopressin decreases the volume of urine primarily by causing**

A. Decrease in glomerular titration rate
B. Increase in water permeability
C. Decrease in water permeability
D. Decrease in renal blood How

529. **A 46-year-old male, Jorawar Singh presented to the emergency with muscle weakness and cramping. He has been taking hydrochlorothiazide for recently diagnosed hypertension. Which of the following is the most likely cause of his symptom?**

A. Hypokalemia
B. Hyponatremia
C. Hypocalcemia
D. Hypoglycemia

530. **A 50-year-old has a history of frequent episodes of renal colic with high calcium renal stones. The most useful diuretic in the treatment of recurrent calcium stones is**

A. Furosemide
B. Spironolactone
C. Acetazolamide
D. Hydrochlorothiazide

531. **Epleronone is**

A. Aldosterone antagonist
B. Can cause hyperkalemia in predisposed patients
C. A diuretic
D. All of these

532. **Which of the following is NOT associated with thiazide diuretics?**

A. Hyperuricemia
B. Hyponatremia
C. Hypokalemia
D. Hypercalciuria

533. **AU of the following statements about amiloride are true EXCEPT**

A. It decreases calcium loss in the urine
B. It is the drug of choice for the treatment of lithium induced diabetes insipidus
C. It antagonises the action of aldosterone
D. It is more potent than triamterene

523 b	524. a	525. d	526. d	527. a	528. b	529. a	530. d	531. d
532. d	533. c							

534. Amiloride differs from spironolactone in that.

A. It acts from the luminal membrane side of the distal tubular cells
B. Its diuretic action is more in the presence of conditions with elevated aldosterone levels
C. It has greater natriuretic action
D. It can cause hypokalemia on long term use

535. Amiloride can cause hyperkalemia due to its action on

A. Electrogenic K^+ channels
B. H^+ -K^+-ATPase
C. Non Electrogenic Na', C1-symporter
D. Electrogenic Na^+ channels

536. Both loop diuretics and thiazides can cause hypokalemia by

A. Increasing the availability of Na^+ in the distal tubular fluid to exchange with interstitial K^+
B. Inhibiting Na-K-2C1 cotransport in the ascending limb of loop of Henle
C. Inhibiting proximal tubular K reabsorption
D. Potentiating the action of aldosterone

537. Most potent loop diuretic is

A. Furosemide
B. Ethacrynic Acid
C. Torsemide
D. Bumetanide

538. Intravenous furosemide is used for rapid control of symptoms in acute left ventricular failure. It provides quick relief of dyspnoea by

A. Causing venodilation
B. Causing rapid diuresis and reducing circulating blood volume
C. Producing bronchodilation
D. Stimulating left ventricular contractility

539. A 60-year-old male Suresh is hospitalized with muscle pain, fatigue and dark urine. His past medical history is significant for stable angina. The patient's medications include atenolol, atorvastatin, and aspirin. His urine dipstick test is positive for blood but urine microscopy did not reveal RBCs in the urine. Serum creatinine kinase was significant raised in this person. The addition of which of the following medications is most likely to have precipitated this patient's condition?

A. Griseofulvin
B. Rifampin
C. Erythromycin
D. Azithromycin

540. The only drug who's over dosage is not characterized by both hypotension and bradycardia is

A. Theophylline
B. Verapamil
C. Clonidine
D. Propanolol

541. Surinder Singh developed acute CHF and was put on digitalis therapy. ECG of this patient revealed the presence of ventricular extrasystoles. Which of the following drugs can be administered safely to this patient in order to counteract this arrhythmia?

A. Amiodarone B. Quinidine
C. Atropine D. Lignocaine

542. In deciding on a treatment for a 60 years old patient, Golu, who has chronic heart disease and rheumatoid arteritis, you wish to give him procainamide. He is already taking digoxin, hydrochlorothiazide and potassium supplementation. Which of the following is a relevant statement?

A. Hyperkalemia should be avoided to reduce the likelihood of procainamide toxicity
B. A possible drug interaction with digoxin suggest that digoxin blood levels should be obtained before and after starting procainamide
C. Procainamide cannot be used if the patient has asthma because it has a beta blocking effect
D. Procainamide is not active by the oral route

534 a	535. d	536. a	537. d	538. a	539. c	540. a	541. d	542. a

543. **A drug effect that is produced by therapeutic doses of both Timolol and amiodarone is blockade of**

A. Beta-1 adrenoceptor
B. Cardiac K+ channels
C. Cardiac Na+ channels
D. Alpha-adrenoceptor

544. **Which of the following drugs hyperpolarizes AV nodal tissue, is used in PSVT and has short lasting adverse effects?**

A. Verapamil B. Adenosine
C. Digoxin D. Propanolol

545. **Which of the following statements is WRONG about amiodarone?**

A. It is longest acting anti-arrhythmic drug.
B. It causes pulmonary fibrosis.
C. It contains iodine
D. It has positive ionotropic action.

546. **Lignocaine is useful for the treatment of**

A. Digitalis induced ventricular extra-systoles
B. Paroxysmal supraventricular tachy-cardia
C. Atrial fibrillation
D. All of the above

547. **All of the following statements are true about quinidine except**

A. It blocks myocardial Na+ channels primarily in the open state
B. It delays recovery of myocardial Na+ channels
C. It produces frequency dependent blockade of myocardial Na+ channels
D. It has no effect on myocardial K+ channels

548. **Which of the following antiarrhythmic drugs can decrease the slope of Phase 0 and prolong the action potential duration?**

A. Quinidine B. Propanolol
C. Lignocaine D. Adenosine

549. **All of the following drugs can be used for the chronic oral treatment of arrhythmia except**

A. Amiodarone
B. Quinidine
C. Esmolol
D. Verapamil

550. **Urgent treatment of procainamide toxicity is**

A. Calcium chelation
B. Sodium lactate
C. Nitroprusside
D. KCI

551. **A patient on nitroprusside therapy developed cyanide toxicity. Sodium nitrate was administered i.v. to combat this poisoning. Beneficial effect of sodium nitrite in this case is dependent on**

A. Conversion of hemoglobin to methemoglobin by sodium nitrate
B. Vasodilatation caused by sodium nitrite
C. Direct chelation of cyanide with sodium nitrite
D. Facilitation of cyanocobalamin formation by sodium nitrate

552. **A patient of acute myocardial infarction being treated in intensive care unit developed left ventricular failure with raised central venous pressure. It was decided to use nitroglycerine. which route of administration would be most suitable?**

A. Sublingual
B. Slow intravenous infusion
C. Intravenous bolus injection
D. Oral

553. **Which of the following drugs is capable of maintaining blood levels for 24 hours after a single administration but has useful antianginal effects lasting only about 10 hours?**

A. Nitroglycerine (transdermal)
B. Isosorbide mononitrate
C. Nitroglycerine (sublingual)
D. Amyl nitrite

543 b	544. b	545. d	547. d	548. a	549. c	550. b	551. a	552. b
553. a							

554. A drug lacking vasodilatory properties that is effective in angina is

A. Isosorbide dinitrate
B. Verapamil
C. Nifedipine
D. Metoprolol

555. Which of the following diuretic acts by inhibiting Na+-Cl symport

A. Furosemide
B. Acetazolamide
C. Spironolactone
D. Chlorthalidone

556. Loop diuretics causes 'postdiuretic Na+ retention due to their short half-life, this can be overcome by

A. Restricting dietary Na+ intake
B. Moe frequent administration of the loop diuretic
C. Both A and B
D. Adding Potassium sparing diuretic

557. Though the drug controlled hypertension on but it reduced resting heart rate to 50/min. which of the following B blockers can be used in this patient as an effective substitute which DOES NOT cause bradycardia

A. Labetalol B. Bisoprolol
C. Pindolol D. Atenolol

558. Which of the following acts by inhibiting late Na channels in myocardium

A. Trimetazidine
B. Ivabradine
C. Sildenafil
D. Ranolazine

559. Which of the following antianginal drug may increase the risk of movement disorders

A. Ivabradine
B. Ranolazine
C. Trimetazidine
D. Fasudil

560. Which of the following has nitrate-like properties and acts as an agonist at ATP sensitive potassium channels

A. Nifedipine
B. Nicorandil
C. Nitroglycerine
D. Nimesulide

561. The main advantage of giving Glyceryl nitrate by sublingual route is

A. It avoids tolerance
B. Has highest lipid solubility
C. It bypasses first pass metabolism when given by sublingual route
D. All of the above

562. A patient was treated with PDE 5 inhibitor for erectile dysfunction. His physician decides to start him with nitrates for angina. He gives a history that he has taken PDE 5 inhibitor 24 hrs. back. In this scenario the patient may be started with nitrates if he has taken following PDE 5 inhibitor

A. Sildenafil
B. Vardenafil
C. Tadalafil
D. Both A & B

563. GTN should not be administered in case of MI in the below conditions except

A. Left ventricular infraction is suspected
B. Systolic BP is < 90 mm Hg
C. Heart rate is < 50 or < 100 beats/min
D. Patient has taken sildenafil in the past 24 hours

564. Molsidomine is a

A. Phosphodiesterase inhibitor
B. Potassium channel opener
C. Direct NO donor
D. Steroid synthesis inhibitor

565. Treatment of choice for digitalis induced ventricular arrhythmias is

A. Esmolol
B. Quinidine
C. Disopyramide
D. Lignocaine

554 d	555. d	556. c	557. c	558. d	559. c	560. b	561. c	562. d
563. a	564. a	565. d						

566. GTN should not be administered in case of MI in the below conditions except

A. Left ventricular infraction is suspected
B. Systolic BP is < 90 mm Hg
C. Heart rate is < 50 or < 100 beats/min
D. Patient has taken sildenafil in the past 24 hours

567. Following anti-angina drug has cardio protective Ischaemic preconditioning

A. Ranolazine B. Nicorandil
C. Trimetazidine D. Dipyridamole

568. Nicorandil acts on

A. Voltage dependent K+ channel
B. Receptor operated K+ channel
C. Na+ activated K+ channel
D. ATP sensitive K+ channel

569. The following drugs are used in treatment of Liddle syndrome except

A. Acetazolamide
B. Triamterene
C. Spironolactone
D. None of the above

570. The following statements are true about pentoxyphylline except

A. It does not cause coronary steal phenomenon
B. It decreases serum theophylline levels when used together
C. Inhibits production of TNF alpha
D. Used to improve sperm motility

571. A patient was on an anti-angina drug. He had difficulty in driving his car in the night due to disturbances in nocturnal vision with flashing lights. The drug known to cause this is

A. Trimetazidine B. Ranolazine
C. Ivabradine D. Nicorandil

572. A patient is on propranolol for performance anxiety, which of the following drugs should not be given to this patient

A. Nifedipine B. Nitrates
C. Verapamil D. ACE inhibitors

573. Which of the following is not used in atrial arrhythmias

A. Verapamil B. Mexiletine
C. Esmolol D. Quinidine

574. DOC for ventricular arrhythmias due to digitalis toxicity is

A. Quinidine B. Amiodarone
C. Lignocaine D. Verapamil

575. An asthmatic present to the emergency department with PSVT, what will be the drug used for its management

A. Adenosine B. Nifedipine
C. Digoxin D. Verapamil

576. Arrhythmias Refractory to the treatment of Lignocaine can be treated by

A. Sotalol B. Amiodarone
C. Diltiazem D. Quinidine

577. The proposed therapeutic plasma amiodarone concentration range is

A. 0.5 to 2 ug/ m L
B. 0.25 to 0.5 ug/ mL
C. to 0.20 ug/ mL
D. to 4 ug/ Ml

578. The most common adverse effect of Quinidine is

A. Hepatitis
B. Thrombocytopenia
C. Bone marrow depression
D. Diarrhea

579. Which of the following is incorrect regarding Procainamide induced lupus syndrome

A. The symptoms of procainamide-induced lupus resolve during treatment with N-acetyl Procainamide
B. The lupus-like symptoms resolve on cessation of therapy
C. Therapy should not be stopped because of the presence of antinuclear antibodies only without symptoms
D. It is more common in rapid acetylators than slow acetylators

566 a	567. b	568. d	569. c	570. b	571. c	572. c	573. b	574. c
575. d	576. b	577. a	578. d	579. d				

580. Which of the following drugs can be cause QT prolongation

A. Lignocaine
B. Esmolol
C. Quinidine
D. Flecainide

581. Which of the following Beta blocker is both class II and class III anti-arrhythmic drugs as per Vaughan-Williams classification

A. Propranolol B. Esmolol
C. Sotalol D. Atenolol

582. Which of the following is a class IC anti-arrhythmic drugs as per Vaughan-Williams classification

A. Lidocaine B. Procainamide
C. Mexiletine D. Propafenone

583. Carperitide is a

A. Recombinant BNP
B. Recombinant ANP
C. Synthetic form of urodilatin
D. Synthetic calcitonin

584. Which of the following beta blocker is not used in Chronic CHF

A. Metoprolol
B. Bisoprolol
C. Carvedilol
D. Nadolol

585. Which of the following is incorrect about Carvedilol

A. B blocker of choice in patients with peripheral artery disease
B. Longer acting because of its accumulation in adipose tissues
C. Ratio of a1- to B-antagonist potency for carvedilol is approximately 1:10
D. Reduces mortality in patients with congestive failure

586. Which of the following is incorrect about DIGIBIND

A. It is immunogenic
B. Used for treating digoxin toxicity
C. Given by IV infusion
D. Digoxin-Digibind complex is rapidly excreted by kidney

587. Digoxin toxicity is increased by all except

A. Renal impairment
B. Hypercalcemia
C. Hyperkalemia
D. Hypomagnesemia

588. Digoxin undergoes relatively slow distribution to effector site(s), so in order to achieve its antiarrhythmic effect, loading dose should be given with in

A. 6 hrs B. 8 hrs
C. 24 hrs D. 12 hrs

589. Mechanism of action of digitalis in atrial fibrillation is

A. By decreasing cardiac contractility
B. Na+ K+ ATPase inhibition
C. By causing bradycardia
D. Increase in Refractoriness of AV nodal tissue

590. Amrinone inhibits

A. PDE 4 B. PDE 5
C. PDE 2 D. PDE 3

591. Dobutamine is preferred over dopamine in cardiogenic shock because of its effect related to

A. Better cardiac stimulation
B. Less peripheral Vasoconstriction
C. Lower risk of cardiac arrhythmias
D. More CNS stimulation

592. Following adverse effects are seen with methyldopa except

A. Gynaecomastia
B. Dryness of Mouth
C. Tremors
D. Diminution in Psychic energy

593. According to JNC VIII Criteria, Initial antihypertensive treatment in population aged 18 years or older with CKD and hypertension is

A. ARB
B. Calcium channel blocker
C. Thiazide Diuretics
D. Beta Blockers

580 c	581. c	582. d	583. b	584. d	585. b	586. a	587. c	588. c
589. d	590. d	591. b	592. c	593. a				

594. According to JNC VIII Criteria, Initial antihypertensive treatment in general black population, including those with diabetes is

A. ARB
B. Calcium channel blocker
C. ACE inhibitor
D. Beta Blockers

595. A 59-Year-old woman was being treated with lithium for bipolar affective disorder on examination, her BP was 160/102 mmHg. What's the most appropriate anti-hypertensive drug for her?

A. Thiazide
B. Doxazosin
C. Amlodipine
D. Losartan

596. The drug of choice for management scleroderma hypertensive crisis is

A. Captopril B. Enalapril
C. Lisinopril D. Ramipril

597. Calcium channel blocker preferred in hypertensive emergency is

A. Nifedipine B. Belodipien
C. Amlodipine D. Clevidipine

598. Which of the following antihypertensive drug absorption is Decreased by high fatty meal

A. Losartan B. Amlodipine
C. Aliskiren D. Chlorthalidone

599. Beta-blockers are used in following disease except

A. Migraine
B. Thyrotoxicosis
C. Glaucoma
D. Hypertension arising from cocaine use

600. Antihypertensive drug that cause positive coomb's test is

A. Clonidine
B. Methyldopa
C. Hydralazine
D. Sodium-Nitroprusside

601. Which of the following is correct regarding Hydralazine induced lupus syndrome

A. More common in Caucasians than in African Americans
B. More common in men than women
C. Antinuclear antibody is seen faster among rapid acetylators
D. All are correct

602. Nitroprusside can worsen arterial hypoxemia in patients with chronic obstructive pulmonary disease because

A. Nitroprusside interferes with hypoxic pulmonary vasoconstriction
B. Promotes mismatching of ventilation with perfusion
C. Both are correct
D. Both are false

603. What is the rationale to administer a beta blocker with sodium nitroprusside while treating acute aortic dissection

A. Reduction of blood pressure with nitroprusside alone can increase the rate of rise in pressure in the aorta as a result of increase myocardial contractility
B. Beta blockers decrease the increased myocardial contractility and prevents propagation of aortic dissection
C. Both are correct
D. Both are false

604. Thiazide diuretics as anti-hypertensive are to avoided in

A. Older patients
B. Pregnancy induced hypertension
C. Isolated systolic hypertension
D. Obese with volume overload

605. Beta blockers are suitable antihypertensive for following conditions except

A. Coexisting anxiety
B. Tachycardia
C. Migraine patients
D. Reynaud's disease

594 b	595. c	596. a	597. d	598. c	599. d	600. b	601. a	602. c
603. c	604. b	605. d						

606. Ankle edema due to Nifedipine is due to

A. Fluid retention
B. Greater dilatation of precapillary Vessels than post capillary vessels
C. Water and sodium reabsorption at tissue
D. None of the above

607. MOST selective ET A antagonist is

A. Bosentan
B. Macitentan
C. Ambrisentan
D. Sitaxsentan

608. Antihypertensive drug contraindicated in patients with allergy to soy or egg is

A. Nicardipine
B. Esmolol
C. Clevidipine
D. Enalaprilat

609. Recommended drug for hypertensive emergency with intracerebral hemorrhage and systolic blood pressure> 140-160 mm Hg is

A. Nitroprusside
B. Methyldopa
C. Clonidine
D. Labetalol

610. Cough and angioedema in a patient receiving ACE inhibitors is due to

A. Brandykinin
B. Renin
C. Angiotensin II
D. All

611. Which of the following ACE inhibitor is NOT a prodrug

A. Fosinopril B. Enalapril
C. Ramipril D. Lisinopril

612. Angiotensin receptor blocker with additional PPAR-r-agonist activity is

A. Losartan
B. Candisartan
C. Telmesartan
D. Eprosartan

613. ACE inhibitor decrease renal micralbumuruia by following mechanism

A. Inhabitation of cytoskeletal rearrangements
B. Inhabitation of retraction of podocyte processes
C. Inhabitation of reduction in proteins of the slit diaphragm
D. All of the above

614. A metabolite of an ARB reducing COX-2 mRNA up regulation among the following is

A. Telmisartan
B. Candesartan
C. Olmesartan
D. Losartan

615. ARB having highest affinity for AT1 receptor among the following is

A. Olmesertan
B. Irbesartan
C. Telmisartan
D. Losartan

616. A patient with gout needs to be started in an ARB, which one of them is best to this patient

A. Telmisartan B. Olmesertan
C. Losartan D. Irbesartan

617. Enzymes activating prodrugs of ACE inhibitors of active form is

A. Amidases
B. Esterases
C. Angiotensin converting enzyme
D. Conjugases

618. Among the following ACE inhibitor with Longest half-life is

A. Enalapril B. Lisinorpril
C. Ramipril D. Perindopril

619. Which of the following medications would be prescribed most frequently to patients suffering from chronic atrial fibrillation?

A. Warfarin
B. Bretylium
C. Lidocaine
D. Adenosine

606 b	607. c	608. c	609. d	610. a	611. d	612. c	613. d	614. d
615. a	616. c	617. b	618. d	619. a				

620. A 64-year-old male had an inferior STEMI and was treated with aspirin, beta-blockers, an angiotensin-converting enzyme inhibitor, and a statin. He was standing at the nurse's station when telemetry showed the following: Wenckebach. Which of the following should you do?

A. Decrease the beta-blocker dose.
B. Refer for coronary angiography.
C. Refer for permanent pacemaker implantation.
D. Insert a temporary trans venous pacemaker.

621. All of the following can be a side effect of digitalis toxicity except:

A. Gingival hyperplasia
B. Confusion
C. Blurred vision
D. Nausea and vomiting

622. A 70-year-old woman had a prosthetic hip joint placed 6 years ago. She has not been to the dentist in years and has decided that maybe she should make a visit. She read on the internet that some people need to take antibiotics before they go to the dentist. She is penicillin-allergic (anaphylaxis). Based on her history so far, which of the following is correct about whether prophylaxis is warranted?

A. Yes, she should take amoxicillin 2 grams 1 hour before her visit.
B. No, presence of prosthetic joints does not require antibiotic prophylaxis.
C. Yes, she should take clindamycin 600 mg 1 hour before her visit.
D. Yes, she should take cephalexin 2 grams 1 hour before her visit.
E. No, presence of prosthetic joints does not require antibiotic prophylaxis.

623. A 35-year-old woman is 16-weeks pregnant. Her BP is 170/110, and her urinalysis shows she has 2+ proteinuria. Otherwise, she has no complaints and is Referred by her obstetrician for treatment of her hypertension. Of the following, which is the best agent to use?

A. Hydrochlorothiazide
B. Ramipril
C. Methyldopa
D. Nitroprusside drip

624. An ECG for a 43-year-old female demonstrates the following rhythm: Torsades. Which of the following electrolyte abnormalities is most likely to cause this rhythm?

A. Hypocalcemia
B. Hypernatremia
C. Hyperkalemia
D. Hypomagnesemia

625. You are called to admit a 32-year-old male who presented to the emergency department with complaints of chest pain. He is admitted to a monitored floor and, during the course of hospitalization, he is shown to have experienced a myocardial infarction. A homocysteine level is found to be very high. Which of the following is not routinely included in the treatment of an acute MI in this young patient?

A. Beta-blockers
B. B vitamin supplements
C. Aspirin
D. ACE inhibitors

626. A 50-year-old man presents to the emergency department with a history of crescendo-pattern chest pain and is admitted to the CCU. While in the CCU, he develops more chest pain, and the nursing staff records a 12-lead ECG that shows 15-mm ST-segment elevation in leads V3 and V5 with additional lesser elevations in leads I, aVL, and V6. These changes revert to normal almost immediately following the administration of sublingual nitroglycerin. Based on your clinical and ECG findings, which of the following medications would be contraindicated in this patient?

A. Propranolol
B. Isosorbide dinitrate
C. Diltiazem
D. Nifedipine

620 a	621. a	622. e	623. c	624. d	625. b	626. a

627. A patient Amit Kumar is suffering from atherosclerosis. Which of the following is the most beneficial drug for prevention of stroke in this patient?

A. Digoxin
B. Warfarin
C. Low dose subcutaneous heparin
D. Aspirin

628. An old woman. Nanda suffered stroke for which she was given Alteplase. She improved considerably. To prevent the recurrence of stroke, this patient is most likely to be treated indefinitely with

A. Urokinase
B. Warfarin
C. Aspirin
D. Enoxaparin

629. Which of the following statements regarding ticlopidine is TRUE?

A. It blocks Gp1ib/Ma receptors on platelet membrane
B. It does not prolong bleeding time
C. It inhibits thromboxane A2 synthesis in platelets
D. It prevents ADP mediated platelet adenylyl cyclase inhibition

630. Drugs used in acute myocardial infarction are all EXCEPT

A. Antiplatelet drugs
B. Thrombolytics
C. Plasminogen activator inhibitors
D. Alteplase

631. With respect to ticlopidine, clopidogrel

A. Is more likely to cause formation of antiplatelet antibodies
B. Has a greater antiplatelet effect
C. Is more likely to cause severe bleeding
D. Is less likely to cause neutropenia

632. An old man, Om Prakash presented with anorexia, weakness and Paranesthesia. On further investigation his hemoglobin came out to be 5. 8 g% and the peripheral smear showed the presence of macrocytic and neutrophils having hyper segmented nuclei. His tendon Reflexes also were sluggish. Endoscopy revealed atrophic gastritis. Deficiency of which of the following factors can lead to such a clinical situation?

A. Folic acid B. Riboflavin
C. Pyridoxine D. Vitamin B

627 d	628. c	629. d	630. c	631. d	632. d

466. A. It is an inhibitor of fatty acid oxidation

Trimetazidine is PFOX[partial fatty acid oxidation] inhibitor suppose to stop progession of angina by inhibiting free radicals generation. It is used as 2nd line drug in angina. Adverse effect of this drug include increased risk of movement disorders. Thus, option A is correct. Ref: Katzung; Topic: angina

467. D. Verapamil

Both verapamil and propanolol decrease the conduction through AV node and their concomitant use can result in heart block.

Thus, option D is correct. Ref: KDT, Topic: angina

468. D. It acts by conversion to an active metabolite in the liver

Amlodipine is the longest acting DHP. It undergoes little first pass metabolism and is distributed widely. Metabolites of amlodipine are inactive.

Thus, option D is correct. Ref: KDT, Topic: calcium channel blockers

469. D. Nifedipine

Vasodilators and peripherally acting CCBs can cause tachycardia and thus may precipitate acute attack of angina. Risk of tachycardia is more with short acting drugs like Nifedipine than with long acting agents like amlodipine.

Thus, option D is correct. Ref: KDT, Topic: angina

470. B. Sildenafil

Nitrates release NO, that acts by increasing cGMP. Phosphodiesterase inhibitors like sildenafil inhibits the breakdown of cGMP. Concomitant use of these two drugs may result in profound hypotension.

Thus, option B is correct. Ref: KDT, Topic: angina

471. D. Sublingual nitroglycerine

Tolerance develops to nitrates, when these are present constantly in the blood. Sublingual route leads to immediate action of nitrates and these act for a shad time. Other preparations mentioned in the question are more likely to give consistent plasma levels of nitrates leading to development of tolerance.

Thus, option D is correct. Ref: KDT, Topic: angina

472. A. Reduction of cardiac preload

Mechanism of action of nitrates in classical angina is reduction in preload (due to venodilation) and in variant angina is coronary vasodilation.

Thus, option A is correct. Ref: KDT, Topic: angina

473. D. It preferentially dilates conducting arteries without affecting resistance arterioles

Nitrates cause redistribution of blood flow without affecting total coronary flow. Auto regulatory small vessels remain unaffected whereas large conducting vessels are dilated. Nitrates are predominantly venodilator, therefore decrease mainly preload.

Thus, option D is correct. Ref: KDT, Topic: angina

474. C. Isosorbide dinitrate

- It can be administered sublingually for the treatment of acute attack of angina whereas by oral route it is used for prophylaxis.
- Pentaerythrital tetranitrate and diltiazem are used only for prophylaxis of angina.
- Dipyridamole actually worsens angina by causing coronary steal phenomenon.

Thus, option C is correct. Ref: KDT, Topic: angina

475. C. Isosorbide Mononitrate

It is a metabolite of Isosorbide dinitrate and is also available as a separate drug. It undergoes least first pass metabolism.

Thus, option C is correct. Ref: KDT, Topic: angina

476. A. Hyperglycemia

CCBs are safe in diabetic patients whereas thiazides and 0-blockers should be avoided.

Thus, option A is correct. Ref: KDT, Topic: Calcium channel blockers

477. A. Organic nitrates

Nitrates act by increasing cGMP and sildenafil inhibits the breakdown of this compound (by, inhibiting phosphodiesterase). Marked increase in cGMP level may result in the profound hypotension and Reflex tachycardia.

Thus, option A is correct. Ref: KDT, Topic: angina

478. A. Atenolol

Tense personality and high resting heart rate (96/min.) makes B-blockers ideal candidate drugs to be used in this case. As blood sugar and lipid profile is normal, beta blockers can be used safely.

Thus, option A is correct. Ref: KDT, Topic: angina

479. D. Enalapril

Thiazides and B-blockers are contra-indicated in diabetic patients. As the patient has frequent travelling job, he is likely to miss the doses. Therefore, clonidine should be avoided to prevent rebound hypertension. ACE inhibitors are safe and effective agents in diabetic patients with hypertension.

Thus, option D is correct. Ref: KDT, Topic: antihypertensives

480. D. Hydralazine

It is a vasodilator and can result in Reflex tachycardia. All other drugs listed in the question (clonidine, propanolol, reserpine) decrease the activity of sympathetic system and can result in bradycardia.

Thus, option D is correct. Ref: KDT, Topic: antihypertensives

481. D. Minoxidi

Vasodilators can lead to Reflex increase in the sympathetic activity. Activation of 0, receptors in the heart can cause tachycardia and release of renin can result in retention of salt and water.

Thus, option D is correct. Ref: KDT, Topic: hypertension

482. B. A 56-year-old diabetic woman

ACE inhibitors are contra-indicated in bilateral renal artery stenosis, pregnancy and in the setting of hyperkalemia.

Thus, option B is correct. Ref: KDT, Topic: hypertension

483. D. Guanethidine

Postural hypotension cause by a-blockers is called first dose hypotension because tolerance occurs to this adverse effect on chronic use. On the other adrenergic neuron blockers continue to produce orthostatic hypertension even on chronic use.

Thus, option D is correct. Ref: KDT, Topic: hypertension

484. C. Prazosin

Methyldopa and clonidine act via decreasing the central sympathetic outflow. Beta blockers act by several mechanisms, one of which is decrease in central sympathetic outflow. Alpha blockers like Prazosin, do not act via central mechanism.

Thus, option C is correct. Ref: KDT, Topic: hypertension

485. C. Methyldopa

Although both methyldopa and minoxidil are prodrugs, conversion of methyldopa to a-methyl norepinephrine takes place in the brain whereas minoxidil is activated to minoxidil sulphate (by phase II reaction) in the periphery.

Thus, option C is correct. Ref: KDT, Topic: hypertension

486. D. Clonidine

Plasma renin activity is increased

by reflex increase in sympathetic discharge. Clonidine decreases central sympathetic outflow and thus will decrease the plasma renin activity. Vasodilators and ACE inhibitors result in reflex increase in plasma renin activity.
Thus, option D is correct. Ref: KDT, Topic: hypertension

487. B. Agonistic action on vascular a2 adrenergic receptors

Alpha 2 receptors are present both presynaptically as well as postsynaptically. Clonidine acts as an a, agonist and decreases the central sympathetic outflow. However, it can also act on vascular postsynaptic a, receptors, leading to vasoconstriction and increase in blood pressure. Chances of this reaction is when clonidine is administered by quick i.v. injection.
Thus, option B is correct. Ref: KDT, Topic: hypertension

488. C. Tachycardia and increased cardiac contractility

Minoxidil is a powerful vasodilator and leads to Reflex stimulation of sympathetic system. Thus, it causes tachycardia, increased contractility and retention of and water by the kidney.
Thus, option C is correct. Ref: KDT, Topic: hypertension

489. C. Decreased angiotensin II concentration in the blood

Enalapril inhibits ACE responsible for the conversion of angiotensin Ito angiotensin II. There is a reflex increase in renin activity. Inhibition of aldosterone auction decreases the reabsorption of Na* and excretion of K' in the urine. It can result in hyperkalemia.
Thus, option C is correct. Ref: KDT, Topic: hypertension

490. D. Increased PR interval on the ECG

Digitalis possesses vagornimetic action and can cause bradycardia and decreased av conduction. This latter effect is manifested in the ECG as increased PR interval. Atropine can block this adverse effect.
Thus, option D is correct. Ref: KDT, Topic: CHF

491. C. Potassium

Hypokalemia precipitates digitalis toxicity but in acute severe digitalis toxicity, there is already hyperkalemia.
Thus, option C is correct. Ref: KDT, Topic: CHF

492. B. Increase in Refractoriness of AV nodal tissue

Digitalis acts in CHF by inhibiting Na^+ K^+ -ATPase whereas in AF, it acts by decreasing the conduction through AV node.
Thus, option B is correct. Ref: KDT, Topic: CHF

493. D. These are drug of choice in acute decompensated heart failure

Beta blockers are contra-indicated in acute decompensated heart failure. For more details, Refer to text.
Thus, option D is correct. Ref: KDT, Topic: CHF

494. B. Nesiritide

- ACE inhibitors and AT, antagonists decrease angiotensin II activity.
- Omapatrilat is a vasopeptidase inhibitor that acts by inhibiting two enzymes, ACE and NEP. As it inhibits ACE, it may also decrease angiotensin II activity.
- Nesiritide is a recombinant BNP and has no effect on angiotensin H activity.

Thus, option B is correct. Ref: Katzung, Topic : CHF

495. A. It affords rapid symptomatic relief in CHF patients

Loop diuretics are used to provide rapid symptomatic relief whereas aldosterone antagonists decrease the mortality by reversing myocardial remodeling.
Thus, option A is correct. Ref: KDT, Topic: CHF

496. A. Amrinone

It is a phosphodiesterase inhibitor and acts as an INODILATOR. It has positive ionotropic effect (increase cardiac

contractility) as well as vasodilator action decrease preload and afterload).
Thus, option A is correct. Ref: KDT, Topic: CHF

497. D. Dobutamine

Dobutamine is indicated only for the acute treatment of decompensated CHEF. Cardiac glycosides (digoxin) can be used for acute treatment as well as maintenance therapy of CHF'. ACE inhibitors and spironolactone are indicated only for chronic CHF.
Thus, option D is correct. Ref: KDT, Topic: CHF

498. D. Antagonism of vasoconstriction due to sympathetic over activity

Beta blockers may actually increase vasoconstriction by antagonizing the vasodilator action of B_2, receptors.
Thus, option D is correct. Ref: KDT, Topic: CHF

499. D. Increase in atrial fibrillation frequency, but decrease in ventricular rate

Digitalis controls the ventricular rate in AF patients. Frequency of atrial fibrillation may actually increase. Ibutilide is approved for the conversion of AF to sinus rhythm.
Thus, option D is correct. Ref: KDT, Topic: CHF

500. B. Atrial fibrillation

Digitalis is used to maintain ventricular rate in this condition.
Thus, option B is correct. Ref: KDT, Topic: CHF

501. C. It is used Io provide relief of symptoms

Digitalis and diuretics are used as symptomatic therapy of CHF. These drugs do not retard ventricular remodeling or prolong survival in CHF patients.
Thus, option C is correct. Ref: KDT, Topic: CHF

502. D. Glomerular filtration

Digoxin is primarily eliminated unchanged by glomerular filtration whereas digitoxin is eliminated by hepatic metabolism.
Thus, option D is correct. Ref: KDT, Topic: CHF

503. B. Beta receptor agonists

These agents are indicated for the treatment of acute decompensated CHF. Digitalis (Na_+ - ATPase inhibitor) is indicated both for acute treatment as well as maintenance in CHF as digoxin is the only orally effective inotropic drug available.
Thus, option B is correct. Ref: KDT, Topic: CHF

504. C. Competitively inhibits Carbonic anhydrase in PT

Acetazolamide:

- Noncompetitively but reversibly inhibits Carbonic anhydrase in Proximal tubule
- Proximal tubular epithelial cells are richly endowed with the zinc metalloenzyme carbonic anhydrase, which is found in the luminal and basolateral membranes
- Carbonic anhydrase inhibitors act on the luminal and basolateral enzymes
- Carbonic anhydrase plays a key role in NaHCO3 reabsorption and acid secretion
- Acetazolamide is a sulfonamide derivatives and to be avoided in sulfa drug allergy patients

Thus, option C is correct. Ref: GG, The Pharmacological Basis of Therapeutics, Topic Diuretics

505. C. Isosorbide

Drug	Half Life (in Hrs)
Glycerine	0.5 to 0.75
Isosorbide	5-9.5
Mannitol	0.25-1.7
Urea	1.2

Thus, option C is correct. Ref: GG, The Pharmacological Basis of Therapeutics; Topic Diuretics

506. C. Glycerin

Glycerin:

- An osomotic diuretic
- It can be metabolized and can cause hyperglycemia

Osmotic diuretics are contraindicated in patients who are anuric owing to severe renal disease

Thus, option C is correct. Ref: GG, The Pharmacological Basis of Therapeutics; Topic Diuretics

507. A. Decrease plasma levels of triglycerides

Loop diuretics:

- Hyperuricemia
- Hyperglycemia
- Increase plasma levels of LDL, cholesterol and Triglycerides
- Decreasing plasma levels of HDL cholesterol

Thus, option A is correct. Ref: GG, The Pharmacological Basis of Therapeutics; Topic Diuretics

508. C. Ototoxicity occurs least frequently with oral administration

Ototoxicity occurs most frequently with rapid intravenous administration

The rate of furosemide infusions should not exceed 4 mg/min to avoid ototoxicity

Most ototoxic loop diuretic is ethacrynic acid

Thus, option C is correct.

Ref: GG, The Pharmacological Basis of Therapeutics; Topic Diuretics

509. D. Enalapril

- Spironolactone and Enalapril both cause hyperkalemia, therefore they should not be given together
- Chlorthiazide cause Hypokalemia and Spironolactone cause hyperkalemia, so both can be combines to counteract thiazide induced Hypokalemia
- No contraindication with Atenolol and verapamil with Spironolactone

Other important drug interactions of Spironolactone:

- Aspirin blocks spironolactone action by inhibiting tubular secretion of its active metabolite canrenone
- Increases plasma digoxin concentration

Thus, option D is correct. Ref: KDT, Topic Diuretics

510. D. Hyperlipidemia

Thiazide diuretics uses are:

- Hypertension
- EDEMA (cardiac, liver, renal)
- Idiopathic hypercalciurea with nephrocalcinosis
- Congestive Heart Failure
- Diabetes Insipidus BOTH central and peripheral
- Osteoporosis

Hyperlipidemia is an adverse effect of thiazide diuretic

Thus, option D is correct. Ref: KDT, Topic: diuretic

511. C. Both A and B

Conivaptan:

- Vasopressin antagonist
- DIURETIC
- Used in SIADH

Rolophylline

- Adenosine A1 receptor blocker
- DIURECTIC

Tried for CHF

Thus, option C is correct. Ref: GG, Topic: Antidiuretics

512. B. Acetazolamide

- Metabolic acidosis with Hypokalemia is seen with acetazolamide
- Metabolic acidosis with Hyperkalemia is seen with Amiloride
- Metabolic alkalosis with Hypokalemia is seen with Torsemide and Chlorthalidone

Thus, option B is correct. Ref: KDT, Topic: diuretic

513. C. Spironolactone

Liddle syndrome (Pseudoaldosteronism):

- An autosomal dominant disorder

- Mutations in the B or Y subunits, leading to increased basal amiloride-sensitive sodium channel activity
- Due to hyperactivity of the amiloride-sensitive, sodium channel of the principal cell of the cortical collecting tubble.
- It includes early-onset severe hypertension, hypokalemia, metabolic alkalosis & low renin and aldosterone
- Treatment of Liddle syndrome with amiloride or triamterene lowers blood pressure and corrects the hypokalemia and acidosis

Spironolactone is not an effective treatment because the increased

Thus, option C is correct. Ref: GG, Topic: diuretic

514. B. Potassium Canrenoate

Aldosterone antagonists and oral bioavailability

- Spironolactone 65%
- Canrenone 80%
- Potassium Canrenoate 100%
- Epleronone 69%

Thus, option B is correct. Ref: GG The Pharmacological basis of Therapeutics Topic: diuretic

515. A. Triamterene

MOA of triamterene:

Amiloride and triamterene **block Renal Epithelial Na+ Channels** in the luminal membrane of principal cells in late distal tubules and collecting ducts by binding to a site in the channel pore.

Thus, option A is correct. Ref: GG The Pharmacological basis of Therapeutics Topic: diuretic

516. B. Thiazide-induced diabetes mellitus is associated with the same cardiovascular disease risk as incident diabetes

Thiazide diuretics are known to cause hyperglycemia

- Thiazide diuretics also decrease glucose tolerance and unmask latent diabetes mellitus
- The mechanism of impaired glucose tolerance appears to involve
- Reduced insulin secretion and alternations in glucose metabolism
- Hyperglycemia is reduced when K^+ is given along with the diuretic
- Thiazide-induced diabetes mellitus is not associated with the same cardiovascular disease risk as incident diabetes

Thus, option B is correct. Ref: GG The Pharmacological Basis of Therapeutics Topic: diuretic

517. B. Hypermagnesemia

Thiazide related to abnormalities of fluid and electrolyte balance extracellular volume depletion

- Hypotension
- Hypokalemia
- Hyponatremia
- Hypochloremia
- Metabolic Alkalosis
- Hypomagnesemia
- Hypercalcemia

Thus, option B is correct. Ref: GG The Pharmacological Basis of Therapeutics 13E/P 455 Topic: diuretic

518. B. Indapamide

Most of the thiazide diuretics are ineffective when the GFR is less than 30-40 mL/min

But the **possible exceptions of metolazone and Indapamide**

Thus, option B is correct. Ref: GG The Pharmacological Basis of Therapeutics Topic: diuretic

519. D. Indapamide

Thiazide and thiazide like diuretics:

Drug	Relative Potency
Chlorthalidone	1
Hydrochlorthiazide	1
Chlorothiazide	0.1
Bendroflumethiazide	10
Metolazone	10
Methyclothiazide	10
Indapamide	20

Thus, option D is correct. Ref: GG, The Pharmacological Basis of Therapeutics Topic: diuretic

520. D. Chlorthalidone

Thiazides:

- Site of action in the cortical diluting segment or the early DT
- Inhibit Na+-Cl symport at the luminal membrane
- They enter the proximal tubule via organic acid secretory pathway
- From there they reach early DT, where they bind to specific receptors located on the luminal membrane

Spironolactone:

a Spironolactone is an aldosterone antagonist

b It combines with Mineralocorticoid Receptor and inhibits the formation of AIPs

Loop diuretics:

a Major site of action: inhibits Na+-K+-2Cl cotransport at the thick Ascending Loop of Henle

Acetazolamide:

a Inhibits carbonic anhydrase enzyme at Proximal convulted tubule

Thus, option D is correct. Ref: GG, The Pharmacological Basis of Therapeutics Topic: diuretic

521. C. Both A and B

- Loop diuretics have short half life
- As the concentration of loop diuretic in the tubular lumen declines
- Nephrons begin to avidly reabsorb Na+, which often nullifies the overall effect of the loop diuretic on total-body Na+.
- This phenomenon of "postdiuretic Na+ retention" can be overcome by
- Restricting dietary Na+ intake or
- By more frequent administration of the loop diuretic

Thus, option C is correct. Ref: GG, The Pharmacological Basis of Therapeutics 13E/P 453 Topic: diuretic

522. C. Desmopressin

Desmopressin is ADH and will exacerbates the symptoms of SIADH. Hypertonic saline (3%NaC1) is used for severely symptomatic patients with hyponatremia. Demeclocycline decreases the release of ADH.

Thus, option C is correct. Ref: CMDT- Topic: diuretic

523. B. Spironolactone

Mostly likely diagnosis in this patient is aldosterone secreting tumor (adenoma) leading to primary hyperaldosteronism (Conn's Syndrome). Aldosterone excess will cause hypertension, hypokalemia, metabolic alkalosis and depressed renin. Aldosterone antagonists such as spironolactone or Epleronone can be used as medical therapy for Conn's syndrome.

Thus, option B is correct. Topic: diuretic

524. A. Hydrochlorothiazide

- Thiazides are useful in the treatment of central as well as nephrogenic DI.
- Vasopressin, Chlorpropamide and carbamazepine are useful only in central DI.

Thus, option A is correct. Ref: KDT, Topic: Diuretics

525. D. It is a selective vasopressin V2 receptor agonist

Vasopressin can act on V_1 and V_2 receptors whereas desmopressin is a selective V2 receptor agonist.

Thus, option D is correct. Ref: KDT, Topic: Diuretics

526. D. Nephrogenic diabetes insipidus

- Desmopressin is the agent of choice for central diabetes insipidus. It has no role in nephrogenic DI (because ADH is already present in this condition).
- Pituitary DI and that due to head trauma are examples of central DI.
- Li induced DI is nephrogenic. Drug of choice for this condition is amiloride.

Thus, option D is correct. Ref: KDT, Topic: Diuretics

527. A. Esophageal varices

Vasoconstriction is caused by V1 receptors whereas anti-diuresis and release of vWF from endothelium is

mediated by V, receptors of vasopressin.
Thus, option A is correct. Ref: KDT, Topic: Diuretics

528. B. Increase in water permeability

In the absence of ADH, collecting ducts are impermeable to water. ADH increases the exocytosis and decreases the endocytosis of water channels (aquaporin's) in the collecting duct cells. This results in increase in permeability of collecting ducts to water.
Thus, option B is correct. Ref: KDT, Topic: Diuretics

529. A. Hypokalemia

A decrease in the intravascular fluid volume stimulates aldosterone secretion and leads to increased excretion of potassium and hydrogen ions in the urine. This results in hypokalemic metabolic alkalosis, which is a common side effect of most diuretics other than the potassium-sparing class. Hypokalemia manifests with muscle weakness and cramping.
Thus, option A is correct. Ref: KK Sharma 2E/P 231 Topic: Diuretics

530. D. Hydrochlorothiazide

Thiazides cause hypercalcemia by decreasing the renal excretion of Ca". These are useful in a patient having hypercalciurea. In such a patient, thiazides decrease the excretion of Ca" in the kidney and thus reduces the chances of stone formation.
Thus, option D is correct. Ref: KDT, Topic: Diuretics

531. D. All of these

Epleronone is an aldosterone antagonist (like spironolactone). It is used as potassium sparing diuretic and can cause hyperkalemia in susceptible individuals particularly in the patients on ACE inhibitors.
Thus, option D is correct. Ref: KDT, Topic: Diuretics

532. D. Hypercalciuria

Thiazides cause hypercalcemia by decreasing its excretion (hypocalciurea) whereas loop diuretics cause hypocalcemia by increasing its excretion. [remember LOOP LOOSES CALCIUM].
Thus, option D is correct. Ref: KDT, Topic: Diuretics

533. C. It antagonises the action of aldosterone

- Amiloride acts by blocking epithelial Na. channels. It has no effect on aldosterone receptors.
- It is more potent than triamterene.
- It decreases Ca" loss in the urine
- It is the drug of choice for lithium induced DI.

Thus, option C is correct. Ref: KDT, Topic: Diuretics

534. A. It acts from the luminal membrane side of the distal tubular cells

- Amiloride is a K+ sparing diuretic and like other diuretics, act from luminal membrane side. On the other hand, spironolactone does not require access to tubular lumen for action.
- Diuretic action of both amiloride and spironolactone is quite feeble.
- Due to its aldosterone receptor blocking action, spironolactone is more effective in the presence of conditions with elevated levels of aldosterone (like CHF).
- Both of these diuretics can cause hyperkalemia when used with K+ supplements or ACE inhibitors.

Thus, option A is correct. Ref: KDT, Topic: Diuretics

535. D. Electrogenic Na^+ channels

- Amiloride and triamterene are K' sparing diuretics that act by inhibiting epithelial Na' channels.
- In the distal tubules and collecting ducts, three separate channels are present (one for Na^+, K^+ and H^+ each). Aldosterone acts on DCT and CD to cause reabsorption of Na^+. This generates a lumen negative potential difference across the membrane of this part of the nephron. To maintain the electric neutrality, K^+ and If+ are secreted in the lumen.
- When amiloride and triamterene inhibits epithelial Na^+ channels, trans

epithelial potential difference is not generated and therefore K^+ and H^+ are not secreted in the lumen. Thus due to more retention of K', amiloride may result in hyperkalemia.

Thus, option D is correct. Ref: KDT, Topic: Diuretics

536. A. Increasing the availability of Na^+ in the distal tubular fluid to exchange with interstitial K^+

Diuretics prevent the reabsorption of Na. in various parts of tubules. Due to decreased reabsorption, more amount of Na^+ reaches the distal portion of the nephron i.e. late DT and collecting ducts. Here, Na^+ is exchanged with K^+ and H^+. Increased distal delivery of Na^+ results in more exchange anti-thus hypokalemia.

Thus, option A is correct. Ref: KDT, Topic: Diuretics

537. D. Bumetanide

Bumetanide is most potent and Torsemide is longest acting loop diuretic.

Thus, option D is correct. Ref: KDT, Topic: Diuretics

538. A. Causing venodilation

- Furosemide is a high ceiling diuretic.
- Its major mode of benefit in acute pulmonary edema is vasodilation. Due to its vasodilatory action, it shifts the fluid from pulmonary to systemic circulation. This results in the rapid relief of symptoms.
- Diuretic action develops later.

Thus, option A is correct. Ref: KDT, Topic: Diuretics

539. C. Erythromycin

The diagnosis in this condition is rhabdomyolysis suggested by myoglobinuria (red colored urine without RBCs) and raised creatinine kinase levels. Statins can cause serious side effects like myopathy and hepatitis. Most statins are metabolized by cytochrome P-450 3A4, with the exception of pravastatin. Concomitant administration of drugs that inhibit statin metabolism (e.g. macrolides) is associated with increased incidence of statin induced myopathy and rhabdomyolysis. Acute renal failure is a possible sequela of rhabdomyolysis.

Thus, option C is correct. Topic: Diuretics

540. A. Theophylline

Propanolol, verapamil and clonidine cause hypotension as well as bradycardia. Theophylline results in Reflex tachycardia due to its vasodilatory action.

Thus, option A is correct. Ref: KDT, Topic: Miscellaneaous

541. D. Lignocaine

Lignocaine is the drug of choice for ventricular arrhythmias due to digitalis toxicity.

Thus, option D is correct. Ref: KDT, Topic: CHF

542. A. Hyperkalemia should be avoided to reduce the likelihood of procainamide toxicity

Thus, option A is correct. Ref: KDT, Topic: CHF

543. A. Beta-1 adrenoceptor

- Amiodarone has wide spectrum of antiarrhythmic actions. It acts by all the four mechanisms i.e. blockade of Na' Na^+ channels, blockade of p receptors, blockade of IC" channels and blockade of Ca^{2+} channels.
- Timolol is a R blocker. Therefore, common action of these. two drugs are inhibition of 13-receptors.

Thus, option A is correct. Ref: KDT, Topic: beta blocker

544. B. Adenosine

Thus, option B is correct. Ref: KDT, Topic: Arrhythmia

545. D. It has positive ionotropic action

Amiodarone possesses myocardial depressant property; not positive ionotropic action.

Thus, option D is correct. Ref: KDT, Topic: Arrhythmia

546. A. Digitalis induced ventricular extrasystoles

Lignocaine is used only for the treatment of ventricular arrhythmias; it

has no role in atrial arrhythmia.
Thus, option A is correct. Ref: KDT, Topic: Arrhythmia

547. D. It has no effect on myocardial K+ channels

Quinidine is a class I antiarrhythmic agent. It blocks Na' channels in the open state and also delays the recovery of these channels. Blockade by these anti-arrhythmic agents is frequency dependent. Class Ia antiarrhythmic, in addition blocks myocardial IC' channels also.
Thus, option D is correct. Ref: KDT, Topic: Arrhythmia

548. A. Quinidine

Na+ channel blockers reduce the slope of phase 0 whereas r channel blockers prolong the APD. Both of these properties are present in class Ia antiarrhythmic like quinidine and procainamide.
Thus, option A is correct. Ref: KDT, Topic: Arrhythmia

549. C. Esmolol

It is a very short acting (3-blocker. It has to be administered i.v. for acute therapy of arrhythmias. Amiodarone, verapamil and quinidine can be used for chronic oral treatment of arrhythmias.
Thus, option C is correct. Ref: KDT, Topic: Arrhythmia

550. B. Sodium lactate

Presser agents (to reverse hypotension) and sodium lactate (to reverse arrhythmias) are indicated for the treatment of procainamide toxicity.
Thus, option B is correct. Ref: CMDT, Topic: Arrhythmia

551. A. Conversion of hemoglobin to methemoglobin by sodium nitrate

Cyanide has very high affinity for the enzymes of respiratory chain particularly cytochrome oxidase. Methemoglobin possesses even higher affinity for cyanides. It can free the enzymes due to competitive inhibition for cyanide. Nitrates act by reducing hemoglobin to methemoglobin, which removes cyanide from the enzymes.
Thus, option A is correct. Ref: KDT, Topic: Arrhythmia

552. B. Slow intravenous infusion

Nitrates can be used in acute LVF by slow i.v. infusion.
Thus, option B is correct. Ref: KDT, Topic: AMI

553. A. Nitroglycerine (transdermal)

Continuous presence of nitrates in blood will result in tolerance.
Thus, option A is correct. Ref: KDT, Topic: Angina

554. D. Metoprolol

Beta blockers act in angina by decreasing exercise induced myocardial work. These do not cause vasodilation. Nitrates and CCBs act by causing vasodilation.
Thus, option D is correct. Ref: KDT, Topic: Angina

555. D. Chlorthalidone

Thiazides:

- Site of action in the cortical diluting segment or the early DT
- Inhibit Na+-Cl symport at the luminal membrane
- They enter the proximal tubule via organic acid secretory pathway
- From there they reach early DT, where they bind to specific receptors located on the luminal membrane

Spironolactone:

- Spironolactone is an aldosterone antagonist
- It combines with Mineralocorticoid Receptor and inhibits the formation of AIPs

Loop diuretics:

- Major site of action: inhibits Na+-K+-2Cl cotransport at the thick Ascending Loop of Henle

Acetazolamide:

- Inhibits carbonic anhydrase enzyme at Proximal convulted tubule

Thus, option D is correct. Ref: GG, The Pharmacological Basis of Therapeutics 13E/P 692 Topic : Diuretics

556. C. Both A and B

- Loop diuretics have short half life
- As the concentration of loop diuretic in the tubular lumen declines
- Nephrons begin to avidly reabsorb Na+, which often nullifies the overall

effect of the loop diuretic on total-body Na+.

- This phenomenon of "postdiuretic Na+ retention" can be overcome by
- Restricting dietary Na+ intake or
- By more frequent administration of the loop diuretic

Thus, option C is correct. Ref: GG, The Pharmacological Basis of Therapeutics, Topic : Diuretics

557. C. Pindolol

Drugs possessing ISA are useful in this situation.

Thus, option C is correct. Ref: KDT, Topic: antihypertensives

558. D. Ranolazine

Ranolazine:

- Acts by inhibiting late Na Channels myocardium
- Through Na+/Ca2+ exchanger, Reduction in Ca2+ overload in the myocardium during ischemia decreases contractility and has a cardio protective effect
- Inhibits fatty acid oxidation and helps in utilization of glucose as fuel in Ischaemic myocardium, thereby decreasing oxygen consumption

Thus, option D is correct. Ref: KDT, Topic: Angina

559. C. Trimetazidine

Trimetazidine:

- May increase the risk of **movement disorders such a Parkinson disease**, particularly in older patients with decreased kidney function
- This serious effect has led to use restrictions by the EMA and the recommendation to use trimetazidine only as second-line treatment of stable angina in patients inadequately controlled by or intolerant to first-line antianginal therapies.

Thus, option C is correct. Ref: GG, Topic: Angina

560. B. Nicorandil

Nicorandil:

- Nicorandil is a nitrate ester of nicotinamide developed as an antianginal agent
- Nicorandil has nitrate-like (cGMO-dependent) properties and acts as an agonist at ATPsensitive potassium channels.

Thus, option B is correct. Ref: GG, Topic: Angina

561. C. It bypasses first pass metabolism when given by sublingual route

Glyceryl nitrate:

- Sublingual route is used when terminating an attack or aborting an imminent on is the m=aim
- Tablet mat be crushed under the teeth and spread over buccal mucosa
- It acts within 1-2 min (peak blood level in 3-6 min) because of direct absorption into systemic circulation (bypassing liver where almost 90% is metabolized).

Thus, option C is correct. Ref: KDT, Topic: Angina

562. D. Both A & B

Drug interaction of Phosphodiesterase 5 inhibitors about nitrates:

- Combination of Phosphodiesterase 5 inhibitors like Sildenafil, Vardenafil, Tadalafil with organic nitrate vasodilators can cause extreme hypotension
- In the presence of a PDE 5 inhibitor, nitrates cause profound increases in cyclic GMP and can produce dramatic reductions in blood pressure
- For this reason, there is a warning that PDE 5 inhibitors should not be prescribed to patients receiving any form of nitrate and dictates that patients should be questioned about the use of PDE5 inhibitors within 24 hours before nitrates are administered
- A period of longer than 24 hours may be needed following administration of a PDE5 inhibitor for safe use of nitrates, especially with tadalafil because of its prolonged t1/2
- Treatment of hypotension due to combined administration of Sildenafil; and a nitrate
- IV fluids and a-adrenergic receptor agonists are used

Thus, option D is correct. Ref: GG, Topic: Angina

563. A. Left ventricular infraction is suspected

In case of MI, GTN should not be administered if:

- Systolic BP is < 90 mm Hg
- Heart rate is < 50 or < 100 beats/min
- Left ventricular infraction is suspected
- Patient has taken sildenafil in the past 24 hours

Thus, option A is correct. Ref: KDT, Topic: AMI

564. A. Phosphodiesterase inhibitor

Molsidomine:

- Direct NO donor
- Second choice for the prevention of angina
- Adverse effects: headache, dizziness, postural, hypotension, syncope
- No documented advantage over GTN/ISDN/ISMN

Thus, option A is correct. Ref: GG; angina

565. D. Lignocaine

Digitalis induced ventricular arrhythmias:

- Lidocaine or phenytoin, which have minimal effects on AV conduction, may be used for the treatment of ventricular arrhythmias that threaten hemodynamic compromise
- Electrical cardioversion carries an increased risk of inducing severe rhythm disturbances in patients with particular caution
- Inhabitation of the Na+, K+ -ATPase activity of skeletal muscle can cause hyperkalemia
- An effective antidote for life-threatening diagnose (ordogotoxin) toxicity is DIGIBIND

Thus, option D is correct. Ref: GG, Topic Arrythmia

566. A. Left ventricular infraction is suspected

In case of MI, GTN should not be administered if:

- Systolic BP is < 90 mm Hg
- Heart rate is < 50 or < 100 beats/min
- Left ventricular infraction is suspected
- Patient has taken sildenafil in the past 24 hours

Thus, option A is correct. Ref: KDT, Topic: AMI

567. B. Nicorandil

Ischaemic preconditioning:

- Is a phenomenon in which brief periods of ischemia and reperfusion exert a cardio protective effect on subsequent total vascular occlusion, and involves opening of mitochondrial ATP sensitive K+ channels
- Nicorandil is believed to exert cardio protective action by simulating 'Ischaemic preconditioning' as a result of activation of mitochondrial KATP channels

Thus, option B is correct. Ref: KDT, Topic: Angina

568. D. ATP sensitive K+ channel

Nicorandil:

- Drug activates ATP sensitive K+ channels (KATP)
- Hyperpolarizing vascular smooth muscle
- Acts as a NO donor and acts by increasing cGMP and relaxes blood vessels
- By activation of mitochondrial KATP channels it has cardio protective action by simulating 'ischemic preconditioning'

Thus, option D is correct. Ref: KDT, Topic: Angina

569. C. Spironolactone

Liddle syndrome (Pseudoaldosteronism):

- An autosomal dominant disorder
- Mutations in the B or Y subunits, **leading to increased basal amiloride-sensitive sodium channel activity**
- Due to hyperactivity of the amiloride-sensitive sodium channel of the

principal cell of the cortical collecting tubule

- It includes early-onset **severe hypertension, hypokalemia, metabolic alkalosis & low renin and aldosterone**
- Treatment of Liddle syndrome with **amiloride or triamterene lowers blood pressure and corrects the hypokalemia and acidosis**

Spironolactone is not an effective treatment because the increased activity of the amiloride-sensitive Na+ channel is not mediated by **aldosterone.**

Thus, option C is correct. Ref: GG; Topic : Diuretics

570. B. It decreases serum theophylline levels when used together

Pentoxyphylline

- Methylxanthine derivative that is called a rheologic modifier
- Analog of theobromine & inhibits PDE
- Reduces blood viscosity and improves microcirculation by improving flexibility of RBCs
- Has rheological property
- Does not cause coronary steal phenomenon
- Inhibits production of TNF alpha

USES:

- To reduce the peripheral claudication
- Non-hemorrhagic stroke
- Chronic cerebrovascular insufficiency
- Trophic leg ulcers
- Improve sperm motality
- Diabetic neuropathy
- Increases serum theophylline levels when used together

Thus, option B is correct. Topic : Phosphodiesterase inhibitors

571. C. Ivabradine

Ivabradine:

- Acts by selectively inhibiting the current in the SA node, known as the 'funny current' (If)
- The (If) is an inward Na+ /K+ current activated by hyperpolarization and ischemia
- Inhabitation of these current by ivabradine decreases myocardial oxygen demand by reducing HR
- No negative ionotropic effect and reduction in BP

(If) in retina

USE:

- In chronic stable angina in patients with sinus rhythm who are intolerant to B blockers or when the latter are contraindicated
- Can also be used in inappropriate sinus tachycardia

Thus, option C is correct. Topic: Angina

572. C. Verapamil

Verapamil and diltiazem should be avoided with beta blockers because both cause myocardial depression leading to marked depression of myocardium

Also addictive sinus depression, conduction defects or asystole may occur.

Thus, option C is correct. Ref: KDT, Topic: Arrythmia

573. B. Mexiletine

Mexiletine:

- Is an analogue of lidocaine
- Has been modified to reduce first-pass hepatic metabolism and permit chronic oral therapy
- Mechanism of action similar to Lignocaine
- It is approved for treating ventricular arrhythmias

Lidocaine:

- It is relatively selective for partially depolarized cell and those with longer APD (whose Na+ Channels remain inactivated for longer period)
- While normal ventricular and conducting fibres are minimally affected, depolarized/damaged fibres are significantly depressed.
- Brevity of atrial AP and lack of lidocaine effect on channel recovery might explain its inefficacy in atrial arrhythmias

Thus, option B is correct. Ref: KDT, Topic: Arrhythmia

574. C. Lignocaine

Ventricular arrhythmias due to digitalis toxicity

- Lidocaine i.v. repeated as required is the drug of choice
- It suppresses the excessive automaticity, but does not accentuate A-V block
- Quinidine, Procainamide and Propafenone are contraindicated
- Lignocaine is DOC but 2nd alternative option is Phenytoin for digitalis induced ventricular arrhythmias

Thus, option C is correct. Ref: KDT, Topic: Arrhythmia

575. D. Verapamil

- Adenosine is DOC for acute termination of PSVT
- Esmolol and Verapamil are alternatives
- But in this case, Adenosine may precipitate bronchospasm in asthma patient also avoid beta blocker in asthmatics

Thus, option D is correct. Ref: KDT, Topic: Arrhythmia

576. B. Amiodarone

- Arrhythmias Refractory to the treatment of Lignocaine can be treated by **Amiodarone** because it is a drug with broad spectrum of action.

Thus, option B is correct. Ref: KDT, Topic: Arrhythmia

577. A. 0.5 to 2 ug/ m L

A factual question. The proposed therapeutic plasma amiodarone concentration range is 0.5 to 2 ug/ m L.

Thus, option A is correct. Ref: GG, Topic: Arrhythmia

578. D. Diarrhea

Adverse effect of Quinidine

- Diarrhea is the most common adverse effect during quinidine therapy, occurring in 30%-50% of patients
- Immunological reactions can occur during Quinidine therapy
- The most common is thrombocytopenia which can be severe but which resolves rapidly with discontinuation of the drug.
- Hepatitis, bone marrow depression and lupus syndrome

Thus, option D is correct. Ref: GG 13E/p 569; Topic: Arrhythmia

579. D. It is more common in rapid acetylators than slow acetylators

Procainamide induced lupus syndrome:

- In individuals who are "slow acetylators," the procainamide-induced lupus syndrome develops more often and earlier during treatment than among rapid acetylators.
- It is more common in slow acetylators than rapid acetylators
- The symptoms of procainamide-induced lupus resolve during treatment with N-acetyl Procainamide
- Therapy should not be stopped because of the presence of antinuclear antibodies only without symptoms.
- The lupus-like symptoms resolve on cessation of therapy

Thus, option D is correct. Ref: GG; Topic: Arrhythmia

580. C. Quinidine

- Quinindine belongs to Class IA antiarrhythmics
- These drugs have their effect on potassium channels and they reduce potassium repolarizing current by blocking potassium channels.
- They cause QT prolongation (Torsades 'de pointes)
- These agents also prolong action potential duration
- Class III antiarrhythmic drugs also block potassium channels
- They can cause QT prolongation
- Amiodarone. Sotalol

Thus, option C is correct. Ref: GG; Topic: Arrhythmia

581. C. Sotalol

Anti-arrhythmic drugs as per Vaughan-Williams classification:

II. Antiadrenergic agents (b blocker)
Propranolol, Esmolol, **Sotalol (also class III)**
III. Agents widening AP
Amiodarone, Dronedarone, **Sotalol** (prolong repolarization and ERP) Dofetilide, Ibutilide
IV. Calcium channel blockers
Verapamil, Diltiazem
Sotalol:

- Sotalol is a nonselective B **adrenergic receptor antagonist** that also prolongs cardiac action potentials by inhibiting delayed rectifier and **possibly other K+ currents**

Thus, option C is correct. Ref: KDT, Topic: Arrhythmia

582. D. Propafenone

Anti-arrhythmic drugs as per Vaughan-Williams classification
CLASS I (Membrane stabilizing agents) (Na+ channel blockers)
1A. Moderately decrease dv/dt of 0 phase

- Quinidine, Procainamide, Disopyramide

IB. Little decrease in dv/dt of 0 phase

- Lidocaine, Mexiletine

1C. Marked decrease in dv/dt of 0 phase

- Propafenone, Flecainide

Thus, option D is correct. Ref: KDT, Topic: Arrhythmia

583. B. Recombinant ANP

Natriuretic Peptides:

- Recombinant ANP (carperitide)
- Recombinant BNP (nesiritide)
- Synthetic form of urodilatin (ularitide)

Natriuretic peptides produce vasodilation and natriuretic and have been investigated for the treatment of **congestive heart failure**.
Thus, option B is correct. Ref: KAT, Topic CHF

584. D. Nadolol

Nadolol is not approved for use in Chronic CHF
Thus, option D is correct. Ref: Essentials of Medical Pharmacology, KDT, Topic:

585. B. Longer acting because of its accumulation in adipose tissues

Carvedilol:

- Alpha + beta blocker
- Nonselective B blocker with a1-antagonist activity
- Ratio of a1-to B-antagonist potency for carvedilol is approximately 1:10
- Duration of action is longer
  - Because drug dissociates slowly from its receptor
  - So duration of action is longer than the short (t1/2(2.2 h)
  - Not due to accumulation in adipose tissue
  - has antioxidant property

USE:

- Hypertension and symptomatic heart failure
  - Carvedilol reduces mortality in patients with congestive heart failure
- It has vasodilating effect
  - So, B-blocker of choice in patients with **peripheral artery disease**

Thus, option B is correct. Ref: GG, Topic CHF

586. A. It is immunogenic

Digoxin antibody (DIGIBIND):

- It is nonimmunogenic because it lacks the fragment
- Given by IV infusion
- Digoxin-Digibind complex is rapidly excreted by kidney

Thus, option A is correct. Ref: KDT, Topic: Topic CHF

587. C. Hyperkalemia

Digoxin toxicity is increased by

- Hypokalemia
- Hypercalcemia
- Hypomagnesemia

Others:
Renal Impairment drugs

- Quinidine
- Amiodarone
- Verapamil
- Thiazide diuretics

Thus, option C is correct. Ref: KDT, Topic: CHF

588. C. 24 hrs

The antiarrhythmic effects of digoxin can be achieved with intravenous or oral therapy

- Digoxin undergoes relatively slow distribution to effector site(s); therefore, even with intravenous therapy, there is a lag od several hours between drug administration and the development of measurable antiarrhythmic effects such as PR interval prolongation or slowing of the ventricular rate in atrial fibrillation
- To avoid intoxication, a loading dose of approximately 0.6 to 1 mg digoxin is administered over 24 hours.

Thus, option C is correct. Ref: GG, Topic CHF

589. D. Increase in Refractoriness of AV nodal tissue

Mechanism of action of digitalis in atrial fibrillation is:

- Increase in Refractoriness of AV nodal tissue
- So that the impulses arising from atrial are not conducted to ventricles and prevents ventricle being continuously stimulated
- It is due to vagomimmetic action of digitalis

Thus, option D is correct. Ref: KDT, Topic: CHF

590. D. PDE 3

Amrinone

- Is a PDE 3 inhibitor
- It is an ionotropic and vasodilator so called as ionodilator

USE

- Severe and Refractory CHF
- ADR
  - Thrombocytopenia

Thus, option D is correct. Ref: KDT, Topic: CHF

591. B. Less peripheral Vasoconstriction

Dobutamine acts only on beta 1 receptors and increases force of cardiac contraction without causing peripheral vasoconstriction

But **dopamine has varied action as below**

Dopamine infusion rate and its different action:

- 1-2 ug/kg/min D1 action renal vasodilatation
- 2-5 ug/kg/min beta action increased heart rate
- 5-6 ug/kg/min alpha action vaso-constriction

So dopamine increases force of cardiac contraction and causes peripheral vaso-constriction at higher doses

Thus, option B is correct. Ref: GG; Topic: CHF

592. C. Tremors

Methyldopa ADVERSE EFFECTS:

- Produces sedation
- Diminution in psychic energy
- Dryness of the Mouth
- Parkinsonian signs
- Hyperprolactinemia: causing gyne-comastia and galactorrhoea

Thus, option C is correct. Ref: GG; Topic: CHF

593. A. ARB

Population aged 18 years or older with CKD and hypertension

- Initial (or add-on) antihypertensive treatment should include an ACEI or ARB to improve kidney outcomes
- This applies to all CKD patients with hypertension regardless of race or diabetes status.

Thus, option A is correct. Ref: 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report from the Panel Members Appointed to the Eighth Joint National Committee (JNC 8)

594. B. Calcium channel blocker

In general, black population, including those with diabetes:

Initial antihypertensive treatment should include

- Thiazide-type diuretic
- CCB

Thus, option B is correct. Ref: 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report from the Panel Members Appointed to the Eighth Joint National Committee (JNC 8)

595. C. Amlodipine

Thiazide cause Hyponatremia leading to lithium toxicity

Losartan cause hyperkalemia

Doxazosin is not the first line drug for anti-hypertensive therapy.

Thus, option C is correct. Ref: Amlodipine

596. A. Captopril

E. The drug of choice for management scleroderma hypertensive crisis is Captopril.

Thus, option A is correct. Ref: CMDT

597. D. Clevidipine

Clevidipine

- Intravenous Clevidipine is an L-type calcium channel blocker with a 1-minute half-life.
- It facilitates swift and tight control of severe hypertension
- It acts on arterial resistance vessels and is devoid of venodilatory or cardio depressant effects even intravenous nicardipine is the most potent and the longest acting of the parenteral calcium channel blockers used in hypertensive emergency.
- CLEVIDIPINE and NICARDIPINE are two calcium channel blockers used for hypertensive emergencies

Thus, option D is correct. Ref: CMDT; Topic Hypertension

598. C. Aliskiren

MOA:

- Potent competitive inhibitor of renin
- Binds the active site of renin and blocks conversion of **angiotensinogen to Angl**

Pk:

- Bioavailability of aliskiren is low but still used orally as it has high affinity and potency
- T1/2 is 20-45 hours
- It is a substrate for P-glycoprotein (Pgp), so bioavailability is less
- Fatty meals significantly decrease the absorption of Aliskiren
- Less hepatic metabolism, so fecal elimination of unchanged drug is common
- One fourth of absorbed drug gets excreted in kidney unchanged

Thus, option C is correct. Ref: GG, Topic : Hypertension

599. D. Hypertension arising from cocaine use

Beta-blockers should not be used to treat hypertension arising from cocaine use:

Hypertension arising from cocaine use:

- Cocaine increases sympathetic outflow
- Increase BP
- Beta-blockers should not be administered until alpha-blockade has been established
- Otherwise, blockade of vasodilatory beta-2 adrenergic receptors will allow unopposed vasoconstrictor alpha-adrenergic receptor activation with worsening of hypertension.

Thus, option D is correct. Ref: CMDT, Topic : Hypertension

600. B. Methyldopa

Methyldopa:

- At least 20% of patients who receive methyldopa for a year develop a positive Coombs test is not necessarily an indication to stop treatment with methyldopa
- But 1%-5% of these patients will develop a hemolytic anemia that requires prompt discontinuation of the drug.
- Treating hypertension in eclampsia

Thus, option B is correct. Ref: GG, Topic: Hypertension

601. A. More common in Caucasians than in African Americans

Hydralazine induced lupus syndrome:

- Drug-induced lupus syndrome usually occurs after at least 6

months of continuous treatment with Hydralazine

- Its incidence is related to dose, gender, acetylator phenotype and race.
- The syndrome is seen more commonly in Caucasians than in African Americans
- The rate of conversion to a positive antinuclear antibody test is faster in slow acetylators than in rapid acetylators.

Thus, option A is correct. Ref: GG, Topic : Hypertension

602. C. Both are correct

- Can worsen arterial hypoxemia in patients with chronic obstructive pulmonary disease because the drug interferes with hypoxic pulmonary vasoconstriction and therefore promotes mismatching of ventilation with perfusion

Thus, option C is correct. Ref: GG, Topic : Hypertension

603. C. Both are correct

In the treatment of acute aortic dissection:

- It is important to administer b-blocker with nitroprusside because reduction of blood pressure with nitroprusside alone can increase the rate of rise in pressure in the aorta as a result of increase myocardial contractility, thereby enhancing propagation of the dissection.

Thus, option C is correct. Ref: GG 13E/P 520 Topic: Hypertension

604. B. Pregnancy induced hypertension

Thiazide diuretics are suitable antihypertensive for following conditions

- Older patients
- Isolated systolic hypertension
- Obese with volume overload
- Low cost therapy

Thiazide diuretics to be avoided in the following conditions

Pregnancy induced hypertension

Gout

Abnormal lipid profile

Thus, option B is correct. Ref: KDT, Topic: Hypertension

605. D. Reynaud's disease

Beta blockers are suitable antihypertensive for following conditions

- Coexisting anxiety or Tachycardia
- Migraine patients
- Low cost therapy

Beta blockers to be avoided in the following conditions

- Asthma, COPD
- Bradycardia,
- PVD like **Reynaud's disease**
- Condition defects
- Decompensated heart-failure
- Relatively young patients
- Abnormal lipid profile

Thus, option D is correct. Ref: KDT, Topic: Hypertension

606. B. Greater dilatation of precapillary Vessels than post capillary vessels

Ankle edema due to

- Because of greater dilatation of precapillary than post capillary vessels at ankle

It is not due to fluid retention

Thus, option B is correct. Ref: KDT, TopicHypertension

607. C. Ambrisentan

Bosentan:

- Is a nonselective ET receptor blocker

Macitentan:

- Cdual endothelin receptor antagonist (ET A and ET B) Additional ET receptor

Ambrisentan

- ET A antagonists with some ET A selectively **sitaxsentan**
- **Most selective ET A antagonist**

Thus, option C is correct. Ref: KAT, Topic : Pulmonary Hypertension

608. C. Clevidipine

Clevidipine

- Intravenous clevidipine is an L-type calcium channel blocker with a 1-minuyte half-life, which facilities swift and tight control of severe hypertension
- It acts arterial resistance vessels and is devoid of cenodilartoruy or card

depressant effects formulated **as lipid emilson for intravenous infusion** so contraindicated in **patients with allergy to soy or egg.**

Thus, option C is correct. Ref: CMDT, Topic Hypertension

609. D. Labetalol

Recommended drug for hypertensive emergency with intracerebral hemorrhage and systolic blood pressure> 140-160 mm Hg

- Nicardipine
- Clevidipine
- Labetalol

Drugs to avoid during hypertensive emergency with Intracerebral hemorrhage and systolic blood pressure > 140-160 mm Hg

- Nitroprusside, Methyldopa, Clonidine, Nitroglycerin

Thus, option D is correct. Ref: CMDT, Topic Hypertension

610. A. Brandykinin

Cough and angioedema in patient receiving ACE inhibitors is due to Bradykinin.

Bradykinin is broken down by enzyme ACE. So inhabitation of ACE leads levels of Brandyklenin leading to Cough and angioedema.

Thus, option A is correct. Ref: CMDT, Topic Hypertension

611. D. Lisinopril

Captopril and Lisinopril are active rest all other ACE inhibitor are prodrugs

- Fosinopril ..... Fosinoprilat
- Enalapril..... Enalaprilat
- Ramipril..... Ramiprilat

Thus, option D is correct. Ref: CMDT, Topic Hypertension

612. C. Telmesartan

Two ARBs, telmisartan and irbesartan, act as selective PPAR modulators

Due to its partial PPARy agonist effect, telmisartan inhibits vascular ACE activity, AT-R1 expression and increases endothelial NO synthesis preventing oxidative stress and endothelial dysfunction

One more addition is azilsartan.

Thus, option C is correct.

613. D. All of the above

In long stranding diabetes:

- At the level of renal epithelial podocytes, activation of ATI receptors by Ang II leads to activation of protein kinase signaling cascades,
- Cytoskeletal rearrangements
- Retraction of podocyte processes
- Reduction in proteins of the slit disphragm

All these process results in increased permeability of the renal epithelium to proteins (proteinuria)

ACE inhibitors reduce these effects of Angil by blocking ACE enzyme, and thereby reducing Angiotensin II LEVELS.

Thus, option D is correct. Ref: GG, Topic Hypertension

614. D. Losartan

Losartan:

- Competitive antagonist of the thromboxane A2 receptor and attenuates platelet aggregation
- A metabolite of losartan COX-2 Mrna upregulation and COX- dependent prostaglandin generation
- An inactive ester prodrug that is completely hydrolyzed to the active form

Candesartan:

An inactive ester prodrug that is completely hydrolyzed to the active form

Telmisartan:

- Has partial agonist of **peroxisome proliferator-activated receptor gamma**

Olmesertan:

- Inactive ester prodrug that is completely hydrolyzed to the active form
- Clearance is by both renal elimination and biliary excretion
- No dose adjustment is required in patients with mild-to-moderate renal or hepatic impairment

Thus, option D is correct. Ref: Goodman & Gilman's, The Pharmacological Basis of Therapeutics, Topic Hypertension

615. A. Olmesertan

Angiotensin II receptor blockers

- Bind the ATI receptor with high affinity
- More than 10,000-fold selective for the ATI receptor over the AT2 receptor
- The rank-order affinity of the ATI receptor for ARBs is candesartan= olmesartan > irbesartan = eprosartan > telmisartan = valsartan = ERP 3174 (the active metabolite of losartan) > Losartan
- Although binding of ARBs to the ATI receptor is competitive, the inhibitory ARBs of biological responses to Angil often is insurmountable (the maximal response to Angil cannot be restored in the presence of the ARB regardless of the concentration of Angil added to the experimental preparation)

Thus, option A is correct. Ref: GG; Topic Hypertension

616. C. Losartan

Angiotensin Receptor Blocker which lowers uric acid levels in Losartan

Losartan

- First ARB to discovered
- It has mild probenecid like uricosuric action
- So, may be preferred in patient with gout and HTN
- Losartan is a competitive antagonist of the thromboxane A2 receptor and attenuates platelet aggregation
- EXP 3179, a metabolic of losartan without angiotensin receptor effects, reduces COX-2 mRNA upregulation and COX- dependent prostaglandin generation

Thus, option C is correct. Ref: KDT, Topic: Hypertension

617. B. Esterases

- Captopril, Lisinopril and Enalaprilat are active molecules
- All the following drugs like Benazepril, Enalapril, Fosinopril, moexipril, perindopril, quinapril, Ramipril and trandolapril are prodrugs
- They need to be converted to active form by the enzyme hepatic esterases present in liver
- Easter moiety is removed by esterases and replaced with hydrogen atom to form the active molecule

Clinical implications

- In hypertensive urgencies Enalapril can't be given because it is a prodrug, but its active moiety Enalaprilat is used.
- So also caution while using in hepatic failure patients

Thus, option B is correct. Ref: GG, Topic Hypertension

618. D. Perindopril

Perindopril

- Prodrug metabolized to Perindoprilat
- Perindoprilat displays biphasic elkimation kinetics with half-lives of **3-10 hours** (the major component of elimination) and **30-120 hours**
- (owing to slow dissociation of perindoprilat from tissue ACE)

Enalapril:

- Prodrug converted to Enalaprilat
- Enalapril has a t1/2-1.3 hours
- Enalaprilat has a plasma t1/2 of -11 hours due to tight binding to ACE

Lisinopril:

- Not a prodrug t1/2 in plasma is -12 hours and does not accumulate in tissues

Ramipril:

- Prodrug converted to Ramiprilat
- Peak concentration of Ramiprilat in plasma are achieved in -3 hours
- Ramiprilat displays triphasic elimination kinetics with half-lives of 2-4 hours, 9-8 hours and >50 hours
- This triphasic elimination is due to extensive distribution of all tissues (initial t1/2). Clearance of free ramiprilat from plasma (intermediate t1/2), and dissociation of ramiprilat from tissue ACE (long terminal t1/2)

So ACE inhibitor with Longest half-life is perindopril.

Thus, option D is correct. Ref: GG; Topic Hypertension

619. A. Warfarin

Chronic AF is associated with a 3-7% annual risk of Ischaemic stroke from

thromboembolism. Guidelines 3 recommend administration of heparin prior to, or concurrently during, immediate electrical or pharmacological cardioversion. If AF has been present for longer than 48 h or the duration is unknown, warfarin should be given for 3–4 weeks following successful cardioversion. Patients admitted for elective cardioversion require adequate anticoagulation with warfarin 3–4 weeks before and after the procedure (INR 2–3). Those patients who cannot be anticoagulated due to contraindications prior to cardioversion should undergo transesophageal echocardiographic examination to exclude the presence of thrombus.

In chronic AF, the risks and benefits of antithrombotic therapy (aspirin, warfarin) must be considered in each individual patient. Chronic hypertension, age >65 yr, diabetes mellitus, previous Ischaemic stroke, ventricular dysfunction and co-existent Ischaemic or valvar heart disease are considered as high risk factors for thromboembolism in AF.

Thus, option A is correct. Ref: GG; Topic Arrythmia

620. A. Decrease the beta-blocker dose.

This patient with a recent myocardial infarction was found on telemetry to have an episode of 2nd degree atrioventricular block: Mobitz type I (Wenckebach block). This conduction abnormality is common in patients with an inferior MI and does not constitute an indication for a pacemaker, particularly in an asymptomatic patient. Decreasing the beta-blocker dose is a reasonable response. Remember that the indication for pacing is symptomatic bradycardia.

Thus, option A is correct. Ref: GG; Topic Arrythmia

621. A. Gingival hyperplasia

Arrhythmias are obviously one of the side effects of toxicity. Blurred vision and "halo" lights are common. GI complaints are very common. Gingival hyperplasia, however, is something that is not associated with digoxin—you can see it with calcium channel blockers like Nifedipine and classically with anti-seizures medications. Headaches are also common.

Ref: GG; Thus, option A is correct. Topic: CHF

622. E. No, presence of prosthetic joints does not require antibiotic prophylaxis.

There is some controversy about the use of antibiotic prophylaxis for prolonged surgery or surgery involving infected areas—but some authorities do recommend prophylaxis. But for routine dental procedures, no prophylaxis is indicated. Remember: She has anaphylaxis to penicillin—you certainly would not use amoxicillin, and you would be a little leery of using a cephalosporin too.

Ref: GG; Thus, option E is correct. Topic: infective endocarditis

623. C. Methyldopa

Methyldopa is the only drug listed that is safe in pregnancy. Beta-blockers and labetalol are commonly used as well. HCTZ may lead to volume depletion in a pregnant woman. Lisinopril, Fosinopril, and all ACE inhibitors are absolutely contraindicated because they cause fetal abnormalities and death. Nitroprusside drip would poison the fetus.

Thus, option C is correct. Ref: GG; Topic: Hypertension

624. D. Hypomagnesemia

Torsades de pointes are a ventricular dysrhythmia with polymorphic QRS complexes. It can arise in many conditions, including electrolyte abnormalities, drug interactions, brain injuries, and heart blocks. The most common electrolyte abnormalities associated with torsades de pointes are hypokalemia and hypomagnesemia. Correction of these abnormalities, external pacing control, and beta-blockers are mainstays of therapy. Hyperkalemia, hypocalcemia, and hypernatremia can all affect heart function, but torsades de pointes are not a common feature of these disturbances.

Thus, option D is correct. Ref: GG; Topic Arrhythmia

625. B. B vitamin supplements

Homocystinemia can arise in several situations including nutritional deficiencies, medication side effects, and as a genetically based condition. High levels of serum homocysteine were thought to have been linked to early-onset cardiovascular disease. Levels of homocysteine can be significantly improved with the use of B vitamin supplements, particularly B 12, B 6, and folate. However, recent data has shown that lowering elevated homocysteine levels does not improve mortality or morbidity in patients with an acute MI.

Thus, option B is correct. Ref: GG; Topic : AMI

626. A. Propranolol

Based on his clinical findings of crescendo type angina and the quickly reversible ECG findings of ST-segment elevation, he likely has variant angina (formerly known as Prinzmetal's). The use of the nonselective beta-blocker propranolol has been shown to actually prolong the duration of vasospasm in patients with variant angina. Nifedipine, sorbate dinitrate, and diltiazem would all be therapeutic and help prevent the spasms. Lovastatin would not help prevent the spasms but would not be contraindicated. Aspirin should be used with caution and is likely best avoided because aspirin inhibits prostacyclin production.

Thus, option A is correct. Ref: GG; Topic Arrhythmia

627. D. Aspirin

- Antiplatelet drugs are used for the prophylaxis of arterial thrombotic conditions like stroke and MI.
- Atrial fibrillation increases the risk of thromboembolism and can result in stroke.

Thus, option D is correct. Ref: KDT, Topic: Atherosclerosis

628. C. Aspirin

Antiplatelet drugs like aspirin or clopidogrel are used to prevent arterial thrombosis (in diseases like MI and stroke).

Thus, option C is correct. Ref: KDT, Topic: AMI

629. D. It prevents ADP mediated platelet adenylyl cyclase inhibition

- Abciximab, eptifibatide and tirofiban inhibits GpIIb/IIIa receptors.
- Ticlopidine and clopidogrel inhibits ADP receptors.
- Aspirin inhibits TXA2 synthesis in platelets.
- Bleeding time is prolonged by antiplatelet drugs whereas PT is prolonged by oral anticoagulants and aPTT by heparin.

Thus, option D is correct. Ref: KDT, Topic: AMI

630. C. Plasminogen activator inhibitors

- Tissue plasminogen activators are used in acute MI (not the inhibitors)
- Thrombolytic agents like streptokinase, Urokinase, Alteplase and reteplase are used to lyse the thrombus.
- Antiplatelet drugs like aspirin are started to prevent the re-infarction.

Thus, option C is correct. Ref: KDT, Topic: AMI

631. D. Is less likely to cause neutropenia

Ticlopidine and clopidogrel are ADP antagonists and are used as antiplatelet drugs.

Antiplatelet action, chances of bleeding and formation of antibodies is similar with these two agents.

Clopidogrel is better tolerated because it is less likely to cause severe neutropenia and thrombocytopenia as compared to ticlopidine.

Thus, option D is correct. Ref: KDT, Topic: AMI

632. D. Vitamin B

- Diagnosis of the patient is pernicious anemia. Factors favoring this diagnosis are:
- Megaloblastic anemia.
- Demyelination (decreased tendon Reflexes)
- Atrophic gastritis

So, he would require B12 supplementation.

Thus, option D is correct. Ref: KDT, Topic: Miscellaneaous

633. An old woman is required to receive 4 cycles of cancer chemotherapy. After her first cycle, she developed chemotherapy-induced thrombocytopenia. Then in the next cycle, it would be appropriate to give this patient

A. Iron dextran
B. Darbopoietin alpha
C. Oprelvekin
D. Filgrastim (G-CSF)

634. Dr. Nitin decided to give oral iron therapy to a patient of iron deficiency anemia. Which of the following adverse effects leads to poor compliance of medicine by the patient?

A. Black stools
B. Staining of Teeth
C. Epigastric pain and bowel upset
D. Metallic taste

635. Which of the following is not used for thromboprophylaxis

A. Warfarin B. Aspirin
C. Heparin D. Antithrombin III

636. In which of the following clinical conditions does the use of anticoagulants provide maximum benefit

A. Cerebrovascular accident
B. Prevention of recurrence of myocardial infarction
C. Retinal artery thrombosis
D. Prevention of venous thrombosis and pulmonary embolism

637. Orally acting direct thrombin inhibitor is

A. Melagatran B. Bivalirudin
C. Ximelgatran D. Argatroban

638. Treatment of choice in a patient acute pulmonary embolism with right ventricular hyperkinesia and a compromised cardiac output but normal blood pressure is

A. IV Filters
B. Thrombolytic agent
C. Warfarin
D. Low molecular weight heparin

639. If a fibrinolytic drug is used for the treatment of acute myocardial infarction the adverse effect most likely to occur is

A. Hemorrhagic stroke
B. Acute renal failure
C. Encephalitis secondary to liver dysfunction
D. Development of antiplatelet antibodies

640. Which of the following medications would be prescribed most frequently to patient suffering from chronic atrial fibrillation

A. Bretylium B. Adenosine
C. Lidocaine D. Warfarin

641. An old woman Nanda suffered stroke for which she was given Alteplase. She improved considerably. To prevent the recurrence of stroke, this patient is most likely to be treated indefinitely with

A. Enoxaparin B. Aspirin
C. Urokinase D. Warfarin

642. Hyperlipidemia is caused by

A. A-methyldopa
B. Nifedipine
C. Propranolol
D. ACE inhibitors

643. Blood and serum samples for blood grouping and cross matching will provide non-reliable results when which of the following colloidal solutions is given to the patient

A. Albumin B. Dextran
C. Mannitol D. Haemaccel

633 c	634. c	635. a	636. d	637. c	638. b	639. a	640. d	641. b
642. c	643. b							

644. Statin-induced myopathy is not exacerbated by which of the following

A. Clofibrate
B. Nicotinic Acid
C. Erythromycin
D. Enalapril

645. Which of the following can be used to treat this condition?

A. Fondaparinux
B. Platelet infusion
C. Whole blood infusion
D. LMWH

646. Streptokinase was infused in a patient for the management of deep vein thrombosis, following which the patient developed hematemesis. Which of the given agents can be chosen to manage this episode of hematemesis?

A. Aprotinin B. Noradrenaline
C. Vitamin K D. Rutin

647. An old woman is required to receive 4 cycle of cancer chemotherapy. After her first cycle, she developed chemotherapy induced thrombocytopenia. Then in the next cycle, it would be appropriate to give this patient

A. Darbopoietin alpha
B. Oprelvekin (IL-11)
C. Iron dextran
D. Filgrastim (G-CSF)

648. Warfarin is administered to a 56-year-old man following placement of a prosthetic cardiac valve. The warfarin dosage is adjusted to maintain an INR of 2.5. Subsequently,trimethoprim-sulfamethoxazole therapy is begun for a recurring urinary tract infection. In addition to monitoring prothrombin time, which of the following actions should the physician take to maintain adequate anticoagulation?

A. Begin therapy with vitamin K
B. Increase the dosage of warfarin
C. Make no alterations in the dosage of warfarin
D. Decrease the dosage of warfarin
E. Stop the warfarin and change to low-dose aspirin

649. Which of the following is most likely to be used in a young child with chronic renal insufficiency?

A. Cyanocobalamin
B. Desferrioxamine
C. Filgrastim (G-CSF)
D. Erythropoietin

650. Hydroxyurea in sickle cell disease acts by

A. decreases nitric oxide
B. increases neutrophil and monocytes
C. inhibits DNA synthesis by acting as a ribonucleotide reductase inhibitor
D. inhibits DNA synthesis by acting as a ribonucleotide synthase inhibitor

651. Hydroxyurea produce which effect on the serum uric acid levels?

A. Hyperuricemia
B. Hypouricemia
C. Variable effect
D. None

652. What are the treatment options for wilson's disease?

A. Pencillamine, Zinc
B. Riboflavin, Zinc, Trientine
C. Penicillamine, Riboflavin, Zinc, Trientine
D. Potassium disulfide, Penicillamine, Zinc, Trientine

653. Patients that are sensitive to aspirin can take:

A. Sulfinpyrazone
B. Clopidogrel, Ticlopidine
C. Ticlopidine
D. Ticagrelor , Clopidogrel, Ticlopidine

654. This drug can potentiate the effect of prostacyclin to antagonize platelet stickiness and therefore decreases platelet adhesion to thrombogenic surfaces.

A. Sulfinpyrazone
B. Dipyridamole
C. ticlopidine
D. None

644 d	645. a	646. a	647. b	648. d	649. d	650. c	651. a	652. d
653. d	654. b							

633. C. Oprelvekin

Oprelvekin is used to stimulate the bone marrow to produce platelets in order to prevent low platelets that may be caused by chemotherapy. Platelets are blood cells that allow the blood to clot, and prevent bleeding.

Oprelvekin may be given to decrease the need for platelet transfusions.

Oprelvekin is not indicated for myeloid malignancies (diseases that start in the bone marrow such as leukemia).

Oprelvekin is a support medication.

Oprevelkin is interleukin 11 analogue

Iron dextran, Darbopoetin are used in in anemia due to chronic disease whereas Figrastim is used in treatment of neutropenia secondary to cancer chemotherapy

Thus, option C is correct. Ref: KDT, Topic Hematopoietic progenitor

634. C. Epigastric pain and bowel upset

Common side effects may include:

- constipation, diarrhea;
- nausea, vomiting, heartburn;
- stomach pain, upset stomach;
- black or dark-colored stools or urine;
- temporary staining of the teeth;
- headache; or.
- unusual or unpleasant taste in your mouth.

But out of these the side effects leading to maximum number of defaulters is gastric upset.

Thus, option C is correct. Ref: KDT Topic: iron deficiency anemia

635. A. Warfarin

The efficacies of thromboprophylaxis of UFH and LWMH were similar in critically ill patients and both drugs act by stimulating antithrombin III. Aspirin is also used as thromboprophylaxis agent in AMI. Warfarin has time lag on 5 days in onset of action so cannot be used in acute thromboprophylaxis.

Thus, option A is correct. Ref: KDT Topic: Anticoagulants

Park J, Lee JM, Lee JS, Cho YJ. Pharmacological and Mechanical Thromboprophylaxis in Critically Ill Patients: A Network Meta-Analysis of 12 Trials. J Korean Med Sci. 2016;31(11):1828-1837.

636. D. Prevention of venous thrombosis and pulmonary embolism

Anticoagulants are predominantly used for venous clot prophylaxis whereas antiplatelet drugs are used in arterial cot prophylaxis. Option A, B and C are arterial clot whereas option D is venous clot. Thus, option D is correct. Ref: KDT, Topic: Antiplatelet and Anticoagulants - uses

637. C. Ximelgatran

Ximelagatran is an anticoagulant that has been investigated extensively as a replacement for warfarin that would overcome the problematic dietary, drug interaction, and monitoring issues associated with warfarin therapy. In 2006, its manufacturer AstraZeneca announced that it would withdraw pending applications for marketing approval after reports of hepatotoxicity(liver damage) during trials, and discontinue its distribution in countries where the drug had been approved. Melagatran is not a drug name. Bivalirudin and argatroban are parenteral direct thrombin inhibitors. Thus, option C is correct. Ref: KDT, Topic: Classification of Anticoagulants

638. B. Thrombolytic agent

Inhaled Nitric oxide, Epoprostenol-Prostaglandin I_2 (PGI_2), Endothelin Antagonists are used in the treatment of this condition. Atrial flutter and fibrillation is also an integral component

in this situation which requires warfarin sometimes.

Thus, option B is correct. Ref: Matthews JC, McLaughlin V. Acute right ventricular failure in the setting of acute pulmonary embolism or chronic pulmonary hypertension: a detailed review of the pathophysiology, diagnosis, and management. Curr Cardiol Rev. 2008;4(1):49-59.

639. A. Hemorrhagic stroke

Adverse Effects and **Contraindications**. Common adverse effects of all the thrombolytic drugs is **bleeding complications** related to systemic **fibrinogenolysis** and lysis of normal **hemostatic** plugs. The **bleeding** is often noted at a catheterization site, although **gastrointestinal**and cerebral **hemorrhages** may occur.

Thus, option A is correct. Ref: KDT Topic: Fibrinolytic side effects

640. D. Warfarin

Dofetilide, or Flecainide. Or Propafenone, or **Amiodarone**, or Sotalol are used along warfarin to prevent embolism in chronic atrial fibrillation patient. The imminent danger is not rate control but embolism.

Thus, option D is correct. Ref: GG, Topic: Atrial fibrillation

641. B. Aspirin

Alteplase is intravenous drug with short t1/2. For chronic arterial prophylaxis, low dose aspirin is used. Warfarin is predominantly a venous clot prophylaxis drug.

Thus, option B is correct. Ref: KDT Topic: Anticoagulants and Antiplatelets

642. C. Propranolol

Adverse drug reactions (ADRs) associated with the use of beta blockers include: nausea, diarrhea, bronchospasm, dyspnea, cold extremities, exacerbation of Raynaud's syndrome, bradycardia, hypotension, heart failure, heart block, fatigue, dizziness, abnormal vision, decreased concentration, hallucinations, insomnia, nightmares, clinical depression, sexual dysfunction, erectile dysfunction and/or alteration of glucose andipid metabolism. Mixed α_1/β-antagonist therapy is also commonly associated with orthostatic hypotension. Carvedilol therapy is commonly associated with edema.

Thus, option C is correct. Ref: KDT, Topic: Nonselective Beta Blockers Side effects and contra-indications

643. B. Dextran

results with **dextran**, as far as the shock **is** concerned, and it doesn›t **give** us a **reliable blood grouping** and **cross matching results**, and **is** less preferred. Mannitol, Haemaccel and albumin do not interfere. Thus, option B is correct. Ref: KDT, Topic: Plasma binder/ Substitutes

644. D. Enalapril

Statins have some important drug interactions. The first type of interaction involves the enzymes responsible for the elimination of statins by the liver. Liver enzymes (specifically, the cytochrome P-450 liver enzymes) are responsible for eliminating all statins from the body with the exception of pravastatin and rosuvastatin. Therefore, drugs that block the action of these liver enzymes [Nicotinic acid and erythromycin] increase the levels of simvastatin, lovastatin, fluvastatin, and atorvastatin (but not pravastatin or rosuvastatin) in the blood and can lead to the development of rhabdomyolysis. Clofibrate have exactly similar ADR profile as that of statins.

Thus, option D is correct. Ref: KDT, Topic: Hypolipidemics

645. A. Fondaparinux

The HIT Syndrome is treated by Argatroban in concomitant renal failure and by lepirudin if there is concomitant liver failure. Maintenance treatment can be done with Fondaparinux.

Thus, option A is correct. Ref KDT, Topic: Anticoagulants

646. A. Aprotinin

Aprotinin, EACA and tranexamic acid

are plasminogen inhibitors thus help in clot formation.

Thus, option A is correct. Topic: Hematemesis

647. B. Oprelvekin (IL-11)

Oprelvekin acts like megakaryocyte colony stimulating factor and can be used to treat and prevent chemotherapy induced thrombocytopenia.

Filgrastim (G-F) and Sargramostim (GM-CSF) are used to prevent leucopenia.

Thus, option B is correct. Ref: Katzung.

648. D. Decrease the dosage of warfarin

Sulfonamides displace warfarin from its plasma protein binding sites, thus potentiating its action. This increases the risk of bleeding. Hence the dose of warfarin must be reduced. Ref KDT, Topic Anticoagualnts - warfarin

649. D. Erythropoietin

Chronic renal failure may result in anemia due to deficient production of erythropoietin.

Thus, option D is correct. Ref: KDT, Topic: Renal Insufficiency

650. C. Inhibits DNA synthesis by acting as a ribonucleotide reductase inhibitor

Hydroxyurea in sickle cell disease acts by inhibits DNA synthesis by acting as a ribonucleotide reductase inhibitor. Ref KDT/8/e Topic Sickle Cell Anemia

651. A. Hyperuricemia

Hyperuricemia is produced by hydroxyurea as a side effect thus contraindicated in gout patients. Ref KDT, Topic : Sickle Cell Anemia

652. D. Potassium disulfide, Penicillamine, Zinc, Trientine

Potassium disulfide, Penicillamine, Zinc, Trientine are the treatment options for wilson's disease. Ref : KDT, Topic : Chelating agents

653. D. Ticagrelor, Clopidogrel, Ticlopidine

Ticagrelor, Clopidogrel, Ticlopidine can be used in aspirin sensitive patient.

Ref Manchette AM, Drucker AG, Januzzi JL Jr. Acute coronary syndrome antiplatelet alternatives in clopidogrel allergy. Pharmacotherapy. 2014 Aug;34(8):e152-6. doi: 10.1002/phar.1446. Epub 2014 Jun 5. PubMed PMID: 24898185.

654. B. Dipyridamole

PDE-3 inhibitor action of Dipyridamole decreases cAMP in the platelets which antagonize platelet stickiness and therefore decreases platelet adhesion to thrombogenic surfaces.

Ref KDT, Dipyridamole : Antiplatelet drugs

655. Selective 5-HT_4 agonist useful in gastroesophageal reflux disease and lacking arrhythmogenic property is

A. Tegaserod B. Buspirone
C. Sumatriptan D. Cisapride

656. Following are drugs used for IBS-constipation predominant except

A. Alosertron B. Lubipristone
C. Linaclotide D. Loxiglumide

657. Prucalopride is a

A. 5HT 3 antagonist
B. M3 Antagonist
C. D2 Antagonist
D. 5HT 4 Agonist

658. The following is a stool wetting agent

A. Lactulose B. Bisacodyl
C. Bran D. Docussates

659. Which of the following is incorrect about Racecadotril

A. It is a prodrug
B. Decreases intestinal hypersecretion, without affecting motility
C. Lowers mucosal cAMP
D. Prevents degradation of endogenous enkephalins which are mainly mu opioid receptor agonists

660. Long term of aluminum hydroxide can cause

A. Vitamin B 12 deficiency
B. Hyperuricaemia
C. Hyperglycemia
D. Osteomalacia

661. Chronic treatment with omeprazole causes following ADRs except

A. Spontaneous bacterial peritonitis in patients with ascites
B. Increased risk of bone fracture
C. Vitamin B 12 Deficiency
D. Hypergastrinemia

662. FDA-approved dose of intravenous pantoprazole for gastroesophageal reflux disease daily is

A. 80 mg B. 160 mg
C. 120 mg D. 40 mg

663. Which of the following is inhibited by Lansoprazole

A. H+ Na+ ATPase pump
B. Na+ K+ ATPase pump
C. H+K+ ATPase pump
D. All of the above

664. Following are differences between Ranitidine and Cimetidine except

A. Ranitidine and cimetidine have wide pharmacokinetic variability
B. Ranitidine is about 5 times more potent than cimetidine
C. Ranitidine has no antiandrogenic action
D. Ranitidine has lesser drug interactions compared to cimetidine

665. Which of the following H2 blocker has no interaction with hepatic CYPs

A. Nizatidine B. Cimetidine
C. Ranitidine D. All of the above

666. Prokinetic drug which is mainly metabolized by Flavin monooxygenases is

A. Cisapride
B. Domperidone
C. Itopride
D. Metoclopropamide

667. True statement about Prokinetic action of domperidone and metacloprapimde is

A. Metacloprapimde prokinetic action is not attenuated by atropine
B. Domperidone prokinetic action is attenuated by atropine
C. Domperidone prokinetic action is not attenuated by atropine
D. None of the above

655 a	656. a	657. d	658. d	659. d	660. d	661. d	662. d	663. c
664. a	665. a	666. c	667. c					

668. The prokinetic activity of metoclopramide is mainly because of

A. Central D2 antagonism
B. Peripheral D2 antagonism
C. 5-HT4 agonism
D. Both B and C

669. Apart from diarrhea, oral rehydration solution has been employed in

A. Severe vomiting
B. Bum cases 571.
C. Heat stroke
D. Both (b) and (c)

670. The new formula WHO-ORS differs from the older standard formula WHO-ORS in the following respect

A. It has no basic salt
B. It has higher K+ concentration
C. It has lower Na+ and glucose concentration
D. Both (b) and (c) are correct

671. The concentration of sodium ions in the standard WHO oral rehydration solution is

A. 90 m moles/L
B. 60 m moles/L
C. 40 m moles/L
D. 110 m moles/L

672. The success of oral rehydration therapy of diarrhea depends upon, which of the following process in the intestinal mucosa

A. Sodium pump mediated Na+ absorption
B. Passive Na+ diffusion secondary to nutrient absorption
C. Bicarbonate coupled Na+ absorption
D. Glucose coupled Na+ absorption

673. Stimulant purgatives are contraindicated in the following

A. Subacute intestinal obstruction
B. Before abdominal radiography
C. Bed ridden patients
D. All of these

674. Which of the following laxatives lowers blood ammonia level in hepatic encephalopathy?

A. Bisacodyl
B. Lactulose
C. Liquid paraffin
D. Magnesium sulfate

675. A patient on cisplatin therapy develops intractable vomiting on the third day of treatment. Agent of choice for controlling this vomiting is

A. Metoclopramide
B. Ondansetron
C. Aprepitant
D. Prochlorperazine

676. Indicate the drug which does not improve lower esophageal sphincter tone or prevent gastroesophageal reflux, but is used as the first line treatment of gastroesophageal reflux disease

A. Sodium alginate + aluminum hydroxide gel
B. Mosapride
C. Omeprazole
D. Metoclopramide

677. Which of the following Prokinetic drugs has been implicated in causing serious ventricular arrhythmias, particularly in patients concurrently receiving erythromycin or ketoconazole?

A. Domperidone
B. Metoclopramides
C. Mosapride
D. Cisapride

678. Activation of the following type of receptors present on myenteric neurons by metoclopramide is primarily responsible for the enhanced acetylcholine release and improving gastric motility

A. Serotonergic 5-HT4
B. Serotonergic 5-HT3
C. Muscarinic M
D. Dopaminergic D2

679. The most effective antiemetic for controlling cisplatin induced vomiting is

A. Prochlorperazine
B. Aprepitant
C. Metoclopramide
D. Ondansetron

668 d	669. d	670. c	671. a	672. d	673. a	674. b	675. c	676. c
677. d	678. a	679. d						

680. Which antipeptic drug selectively blocks levodopa induced vomiting without blocking its anti-Parkinsonian action?

A. Domperidone
B. Cisapride
C. Metoclopramide
D. Ondansetron

681. Which of the following Prokinetic drugs produces extrapyramidal side effects?

A. Domperidone
B. Cisapride
C. Metoclopramide
D. All of the above

682. Metoclopramide has the following actions EXCEPT

A. Increase lower esophageal sphincter tone
B. Increase large intestinal peristalsis
C. Increase gastric peristalsis
D. Prokinetic action is blocked by atropine

683. In case of hill journey, antimotion sickness drugs are best administered at(a) Twelve hours before commencing journey

A. Twelve hours before commencing journey
B. At the first feeling of motion sickness
C. Immediately after commencing journey
D. One hour before commencing journey

684. Antacid combinations of magnesium and aluminum salts are superior to single component preparations because

A. They have rapid as well as sustained acid neutralizing action
B. They are less likely to affect gastric emptying
C. They are less likely to alter bowel movement
D. All of the above

685. Choose the antiulcer drug that inhibits gastric acid secretion, stimulates gastric mucus anti bi-carbortate secretion and has cyto-protective action on gastric mucosa

A. Carbenoxolone sodium
B. Sucralfate
C. Misoprostol
D. Colloidal bismuth subcitrate

686. Drug of choice for the treatment of peptic ulcer caused due to chronic use of NSAIDs is

A. Esomeprazole
B. Loxatidine
C. Misoprostol
D. Pirenzepine

687. The following is true of anti-H. pylori therapy EXCEPT

A. Colloidal bismuth directly inhibits H. pylori but has poor patient acceptability
B. Resistance to any single antimicrobial drug develops rapidly
C. Concurrent suppression of gastric acid enhances the efficacy of the regimen
D. It is indicated in all patients of peptic ulcer

688. Choose the CORRECT statement about colloidal bismuth subcitrate

A. It causes prolonged naturalization of gastric acid
B. It relieves peptic ulcer pain promptly
C. It has anti H. pylori activity
D. All of the above are correct

689. The following anti-ulcer drug DOES NOT act by reducing the secretion of or neutralizing gastric acid

A. Sucralfate
B. Megaldrate
C. Misoprostol
D. Omeprazole

690. Ranitidine differs from cimetidine in the following respect,

A. It is less potent
B. It is shorter acting
C. It produces more CNS side effects
D. It does not have anti-androgenic action

680 a	681. c	682. b	683. d	684. d	685. c	686. a	687. d	688. c
689. a	690. d							

691. Choose the CORRECT statement about H, receptor blockers

A. They prevent stress ulcers in the stomach
B. They cause faster healing of duodenal ulcers
C. They are the most efficacious drugs in inhibiting gastric acid secretion
D. They afford the most prompt relief of ulcer pain

692. A patient Sonia is diagnosed to be having iron deficiency anemia. The agent that can be used to improve the absorption of iron is

A. Antacids
B. Ascorbic acid
C. Phosphates
D. Tetracyclines

693. A 40-year-old man has megaloblastic anemia and early signs of neurological abnormality. The drug most probably required is

A. Vitamin B_{12}
B. Iron sulphate
C. Erythropoietin
D. Folic acid

694. Which of the following is an indication for the use of folinic acid?

A. Prophylaxis of neural tube defects in the offspring of women receiving anticonvulsant medications
B. Pernicious anemia
C. Counteracting toxicity of high dose methotrexate therapy
D. Anemia associated with renal failure

695. Which of the following metabolic reactions require vitamin B. but not folate?

A. Conversion of serine to glycine
B. Conversion of homocysteine to methionine
C. Conversion of malonic acid to succinic acid
D. Thymidylate synthesis

696. The difference between iron sorbitol-citric acid and iron dextran is that the former

A. Is not excreted in urine
B. Is not bound to transferrin in plasma
C. Cannot be injected i.v.
D. Produces fewer side effects

697. A 46-year-old male presents to OPD with diarrhea and abdominal pain. On investigations, it was found to be non-infective and you proceed with diphenoxylate therapy in this patient. Which of the following is the primary target for the drug you prescribed to this patient?

A. Secretion
B. Motility
C. Inflammation
D. Digestion

698. Aryan, a 14-year-old boy presented with chronic diarrhea and weight loss. History reveals that he has repeated attacks of respiratory tract infections with pseudomonas aeruginosa. His younger brother died from a severe respiratory infection at the age of 7. Which of the following agents is most likely to improve this patient's condition?

A. Octreotide
B. Loperamide
C. Metronidazole
D. Pancreatic lipase

699. Choose the correct statement about the use of opioid anti-motility drugs in the management of diarrhea

A. They are used to control diarrhea irrespective of its etiology
B. They are used as adjuvant to antimicrobial therapy of diarrhea
C. They are the drug of choice in irritable bowel syndrome diarrhea
D. They should be used only as a short term measure after ensuring that enter invasive organisms are not involved

700. The preferred drug for controlling an acute exacerbation of ulcerative Colitis is

A. Mesalazine
B. Sulfasalazine
C. Prednisolone
D. Vancomycin

691 a	692. b	693. a	694. c	695. c	696. c	697. b	698. d	699. d
700. c								

655. A. Tegaserod

Both Cisapride and Tegaserod are selective $5HT_4$, agonists useful in the treatment of GERD. Cisapride possesses cardiac K_+ channel blocking activity and can lead to torsades de pointes. Tegaserod is devoid of this adverse effect. However, tegaserod has recently been withdrawn due to increased risk of MI and stroke.

Thus, A is correct. Ref: KDT, Topic: prokinetics

656. A. Alosertron

Lubipristone:

- A bicyclic fatty acid metabolite analogue of prostaglandin E1 activates type-2-chloride channels

Linaclotide:

- Guanylate cyclase agonist

Loxiglumide:

- Is a CCK1 receptor antagonist
- Used in constipation dominant IBS.

Alosertron:

- 5HT3 Antagonist
- Diarrhea-predominant irritable bowel syndrome in women only

Thus, A is correct. Ref: HARRISON 19E/P 1970 Topic: (IBS)

657. D. 5HT 4 Agonist

Prucalopride:

- Is a specific 5HT4 receptor agonist
- Facilitates cholinergic neurotransmission
- Acts throughout the length of the intestine, increasing oral-cecal transit and colonic transit without affecting gastric emptying

USE:

- Approved or use in women with **chronic constipation in whom laxatives fail to provide adequate relief**

Thus, D is correct. Ref: GG; Topic : prokinetics

658. D. Docussates

Docusate salts

- Are anionic surfactants/stool wetting agent
- Softens the stools by net water accumulation in the lumen
- Lower the surface tension of the stool to allow mixing of aqueous and fatty substances, softening the stool and permitting easier defecation
- These agents also stimulate intestinal fluid and electrolyte secretion (possibly by increasing mucosal cyclic AMP) and alter intestinal mucosal permeability
- Docusate sodium and docusate calcium are available in several dosage forms:
- Lactulose
- Is an osmotic purgative
- Bisacodyl
- Is a stimulant laxative
- Bran
- Is a forming laxative

Thus, D is correct. Ref: GG; Topic : Prokinetics

659. D. Prevents degradation of endogenous enkephalins which are mainly mu opioid receptor agonists

Racecadotril:

- Is a prodrug rapidly converted to thiorphan
- Thiorphan is an enkephalinase inhibitor
- Enkephalinase inhabitation prevents degradation of endogenous enkephalins which are mainly mu opioid receptor agonists
- It decreases intestinal hypersecretion, without affecting motility by lowering mucosal cAMP due to enhanced ENK action

- GI motility appears to be regulated through it receptors

USE:

- Short term treatment of acute secretory diarrheas
- Non contraindicated in children

Thus, D is correct. Ref: KDT, Topic: diarrhea treatment

660. D. Osteomalacia

Aluminum hydroxide:

- Binds phosphate in the intestine and prevents its absorption
- Hypophosphatemia occurs on regular use this leads to oseomalacia

This adverse effect (hypophosphatemia) can be taken as an and used therapeutically in hyperphosphatemia and phosphate stones.

- Small amount of aluminum that is absorbed is excreted by kidney. This is impaired in renal failure leading to aluminum toxicity, which may present with encephalopathy, Osteoporosis.

Thus, D is correct. Ref: KDT, Topic: Peptic ulcer disease

661. D. Hypergastrinemia

Chronic treatment with omeprazole:

- Decreases the absorption of vitamin B12
- Increased risk of bone fracture
- Increased susceptibility to certain infections (e.g., hospital-acquired pneumonia, community-acquired Clostridium difficile, spontaneous bacterial peritonitis in patients with ascites)
- Hypergastrinemia

Thus, D is correct. Ref: GG, Topic : Peptic ulcer disease

662. D. 40 mg

Pantoprazole:

The FDA approved dose of intravenous pantoprazole

- For gastroesophageal reflux disease is 40 mg daily for up to 10 days
- 160-240 mg given in divided doses
- Used in Zollinger-Ellison syndrome

Thus, D is correct. Ref: GG, Topic: Peptic ulcer disease

663. C. H+K+ ATPase pump

Lansoprazole:

- Is a proton pump inhibitor
- Acts by inhibiting H+ K+ ATPase pump **irreversibly**

Thus, C is correct. Ref: KDT, Topic: Peptic ulcer disease

664. A. Ranitidine and cimetidine have wide pharmacokinetic variability

Differences between Ranitidine and Cimetidine:

- Ranitidine is about 5 times more potent than cimetidine
- Ranitidine has similar pharmacokinetic profile and t1/2 of 2-3 hr similar to cimetidine
- But ranitidine has longer duration of action (24-hour acid suppression) due to its high potency
- Ranitidine has lesser drug interactions compared to cimetidine
- Ranitidine doesn't cross BBB

Thus, A is correct. Ref: KDT, Topic: Peptic ulcer disease

665. A. Nizatidine

Cimetidine inhibits CYPs

- CYP1A2, CYP2C9 and CYP2D6

Ranitidine

- Also interacts with hepatic CYPs, but with an affinity of only 10% of that of cimetidine
- Ranitidine interferes only minimally with hepatic metabolism of other drugs

Famotidine and Nizatidine:

- Are even safer in this regard, with **no significant drug interactions mediated by inhibiting hepatic CYPs.**

Thus, A is correct. Ref: GG, Topic : Peptic ulcer disease

666. C. Itopride

Itopride:

- Itopride is metabolized mainly by Flavin monooxygenases and not by CYP450 isoenzymes.
- So Minimal drug interactions other options

- Cisapride, Domperidone and Metoclopropamide metabolized mainly by CYP450 isoenzymes.

Thus, C is correct. Ref: KDT, Topic: Prokinetics

667. C. Domperidone prokinetic action is not attenuated by atropine

Domeperidone:

- Its prokinetic action is not attenuated by atropine and is based only on D2 receptor blockade in upper g.i.t.

Metacloprapimde:

- The peripheral action can augment Ach release in the gut, but appears to be minor
- Its prokinetic action is attenuated by atropine

Thus, C is correct. Ref: KDT, Topic: Prokinetics

668. D. Both B and C

Metoclopramide:

- This is the primary mechanism
- Metoclopramide acts in the g.i.t. to enhance Ach release from myenteric motor neurons
- This results from **5-HT4 receptor activation** on primary afferent neurons (PAN) of the ENS via excitatory interneurons
- The gastric hurrying and LES tonic effects are mainly due to this action which is synergized by bethanechol and attenuated by atropine

Peripheral D 2 antagonism:

- Hastening gastric emptying
- Enhancing LES tone by augmenting Ach release
- This is the secondary mechanism

Thus, D is correct. Ref: KDT, Topic: Antiemetics

669. D. Both (b) and (c)

Non-diarrheal uses of ORS include:

- Maintenance of hydration in postsurgical, post burn and post-trauma patients.
- Heat stroke
- During changeover from total parenteral nutrition to external nutrition.

Thus, is correct. Ref: KDT, Topic: diarrhea management

670. C. It has lower Na^+ and glucose concentration

- New formula ORS contain less Na+ and glucose than standard formula ORS.
- Total osmolality is decreased to 245 mmol/L in New Formula WHO ORS.

Thus, C is correct. Ref: KDT, Topic: diarrhea management

671. A. 90 m moles/L

Concentration of Na^+ is 90 mmol/L in standard WHO-ORS whereas it is 75 mmol/L in New Formula ORS.

Thus, A is correct. Ref: KDT, Topic: diarrhea management

672. D. Glucose coupled Na^+ absorption

Concentration of Na is 90 mmol/L in standard WHO-ORS whereas it is 75 mmol/L in New formula ORS.

Thus, D is correct. Ref: KDT, Topic: diarrhea management

673. A. Subacute intestinal obstruction

Stimulant (or irritant) purgatives are contra-indicated in pregnancy and intestinal obstruction (both subacute as well as chronic).

Thus, A is correct. Ref: KDT, Topic: constipation management

674. B. Lactulose

Lactulose is degraded to lactic acid that converts NH_3 to NH_4^+. As ionic molecules cannot cross biological membranes, it is not absorbed and is thus excreted.

Thus, B is correct. Ref: KDT, Topic: constipation management

675. C. Aprepitant

Cisplatin induced vomiting has two phases.

- Early Phase: It occurs within first 24 hours. 5 HT3 antagonists like ondansetron are the agents of choice for this condition.
- Delayed Phase: Vomiting occurring after 24 hours is less responsive to ondansetron and other drugs. It

is best controlled by substance P antagonist like aprepitant.

Thus, C is correct. Ref: Katzung, 1028 Topic : Antiemetics

676. C. Omeprazole

- Treatment of GERD can be accomplished by
- Increasing GI motility with Prokinetic drugs (like metoclopramide and Mosapride) or
- By decreasing gastric acid secretion with PPIs like omeprazole.

Thus, C is correct. Ref: KDT, Topic: Peptic ulcer disease

677. D. Cisapride

Cisapride is a 5HT4 agonist that can block cardiac K+ channels at high concentration. When these are administered with microsomal enzyme inhibitors (like erythromycin or ketoconazole), polymorphic ventricular tachycardia can result.

Mosapride and tegaserod are other 5HT4 agonists that are devoid of arrhythmogenic action.

Thus, D is correct. Ref: KDT, Topic: antiemetics

678. A. Serotonergic 5-HT_4

Gastric motility is increased by ACh. Release of this neurotransmitter is enhanced by $5HT_4$ receptor stimulation and 5 HT_3 and D_2 receptor antagonism.

Thus, A is correct. Ref: KDT, Topic: antiemetics

679. D. Ondansetron

5HT3 antagonists like ondansetron, Granisetron and topisetron are the agents of choice for chemotherapy induced vomiting.

Thus, D is correct. Ref: KDT, Topic: antiemetics

680. A. Domperidone

- Levo-dopa induced vomiting is due to stimulation of D2 receptors in CTZ whereas its antiparkinsonian action is due to agonistic action on D2 receptors in the nigrostriatal pathway.
- Both metoclopramide and Domperidone inhibit D2 receptors in CTZ and thus counteract vomiting induced by 1-dopa.
- Metoclopramide also crosses BBB and thus abolishes the therapeutic action of 1-dopa by inhibiting central D_2 receptors.
- Domperidone cannot cross BBB, thus does not interfere with antiparkinsonian action of 1-dopa.
- Cisapride (5HT4 agonist) and ondansetron (513T3 antagonist) do not affect dopaminergic pathway.

Thus, A is correct. Ref: KDT, Topic: antiemetics

681. C. Metoclopramide

- Metoclopramide and Domperidone act by blocking D_2 receptors.
- Metoclopramide can cross BBB whereas Domperidone cannot.
- Therefore, metoclopramide can produce extra-pyramidal adverse effects while Domperidone is devoid of it.
- Cisapride acts as 5HT4 agonist. It can cause torsades de pointes.

Thus, C is correct. Ref: KDT, Topic: antiemetics

682. B. Increase large intestinal peristalsis

- Metoclopramide is a Prokinetic and anti-emetic drug. It acts by blocking 1202 and 5 HT, receptors and stimulating 5-HT4 receptors. D2 receptors are normally inhibitory to the release of ACh. Metoclopramide enhances ACh release by blocking these inhibitory D2 receptors. Due to increased release of ACh, there is increase in gastric motility and LES tone. Prokinetic action can thus be blocked by atrophic.
- Metoclopramide has no effect on colonic motility.

Thus, B is correct. Ref: KDT, Topic: antiemetics

683. D. One hour before commencing journey

Hyoscine is administered half to one hour before journey for prevention of motion sickness. It has no role once the vomiting starts.

Thus, D is correct. Ref: KDT, Topic: antiemetics

684. D. All of the above

- Mg (OH)2 has a quick onset whereas Al (OH), acts for a long time.
- Magnesium salts cause osmotic diarrhea whereas aluminum salts cause constipation. Combination of these two agents minimizes the impact on bowel movements.

Thus, D is correct. Ref: KDT, Topic: Peptic ulcer disease

685. C. Misoprostol

Thus, C is correct. Ref: KDT, Topic: Peptic ulcer disease

686. A. Esomeprazole

- Proton pump inhibitors are the drugs of choice for peptic ulcer disease due to any etiology.
- Misoprostol is the MOST SPECIFIC drug for the treatment of PUD due to chronic NSAID use because it is a PGE, analog.

Thus, A is correct. Ref: KDT, Topic: Peptic ulcer disease

687. D. It is indicated in all patients of peptic ulcer

- Triple drug therapy for H. pylon is indicated in those patients in whom infection is detected by urea breath test. Since H. pylon becomes less virulent in the absence of acid, combination with PPI is more effective.
- Because resistance can develop to single agents, these are used in combination.
- Colloidal bismuth subcitrate dislodges H. pylon but produces metallic taste and blackening of tongue.

Thus, D is correct. Ref: KDT, Topic: Peptic ulcer disease

688. C. It has anti H. pylori activity

Colloidal bismuth subcitrate forms an acid resistant protective coating over the ulcer base. It also dislodges H. Pylori from the surface of gastric mucosa.

Thus, C is correct. Ref: KDT, Topic: Peptic ulcer disease

689. A. Sucralfate

- Megaldrate is an antacid. It acts by neutralizing the gastric acid.
- Omeprazole and misoprostol decrease the secretion of gastric acid.
- Sucralfate is an ulcer protective agent. It forms the protective coating over the ulcer base.

Thus, A is correct. Ref: KDT, Topic: Peptic ulcer disease

690. D. It does not have anti-androgenic action

Cimetidine is rarely used now because:

- It is the least potent It blocker
- It is a short acting agent
- It is a potent inhibitor of microsomal enzymes
- It can cause gynaecomastia
- It produces more CNS adverse effects

Thus, D is correct. Ref: KDT, Topic: Peptic ulcer disease

691. A. They prevent stress ulcers in the stomach

- H_2 receptor blockers like ranitidine are used to prevent stress ulcers.
- Most effective agents for inhibiting acid secretion and treatment of gastric as well as duodenal ulcers are PPIs
- Antacids afford most prompt relief of ulcer pain.

Thus, A is correct. Ref: KDT, Topic: Peptic ulcer disease

692. B. Ascorbic acid

	Substances Improving the absorption of iron		Substances Improving the absorption of iron
1.	Acid	1.	Antacids
2.	Reducing substances like ascorbic acid	2.	Phosphates
3.	Meat	3.	Phylates
		4.	Tetracyclines
		5.	Food in the stomach

Thus, B is correct. Ref: KDT, Topic: anemia

693. A. Vitamin B_{12}

Deficiency of vitamin B_{12} results in megaloblastic anemia and demyelination. It can cause subacute combined degeneration of spinal cord and peripheral neuritis.

Thus, A is correct. Ref: KDT, Topic: anemia

694. C. Counteracting toxicity of high dose methotrexate therapy

- Prophylaxis of neural tube defects require treatment with folic acid.
- Methotrexate toxicity can be prevented by 5'-formyltetrahydrofolate (folinic acid).
- Pernicious anemia requires the therapy with vitamin B12.
- Anemia associated with chronic renal failure is treated with erythropoietin.

Thus, C is correct. Ref: KDT, Topic: anemia

695. C. Conversion of malonic acid to succinic acid

Conversion of malonic acid to succinic acid requires vitamin B12 but not folate. This reaction is required for myelin formation and deficiency of B12 is responsible for demyelination.

Thus, C is correct. Ref: KDT, Topic: anemia

696. C. Cannot be injected i.v.

Iron sorbitol citrate should not be used i.v. because it may rapidly saturate the transferrin receptors and can result in high concentrations of free iron.

Thus, C is correct. Ref: KDT, Topic: anemia

697. B. Motility

Diphenoxylate is an opioid; it binds to mu receptors in the GIT and slows motility.

Thus, B is correct. Ref: KAT, General considerations

698. D. Pancreatic lipase

In young male, a history of recurrent respiratory infections with P. aeruginosa, chronic diarrhea, weight loss and death of a sibling due to respiratory infection suggests a diagnosis of cystic fibrosis (CF). Chronic diarrhea and weight loss in patients with CF are typically caused by malabsorption secondary to pancreatic insufficiency and can be corrected by pancreatic enzyme supplementation.

Thus, D is correct. Ref: KAT, Topic: diarrhea management

699. D. They should be used only as a short term measure after ensuring that enter invasive organisms are not involved

Thus, D is correct. Ref: KDT, Topic: diarrhea management

700. C. Prednisolone

Corticosteroids are the mainstay of treatment of acute exacerbation of ulcerative colitis / acute exacerbation of any autoimmune disorder.

Thus, C is correct. Ref: KDT, Topic: inflammatory bowel disease

Antimicrobial Drugs — Questions

701. Drugs used for giardiasis during the 1st trimester of pregnancy is

A. Metronidazole
B. Tinidazole
C. Clindamycin
D. Paromomycin

702. Metronidazole is used in the following conditions except

A. Amoebiasis
B. Histoplasmosis
C. Trichomoniasis
D. Giardiasis

703. Which of the following is not a luminal amoebicide

A. TetracyclineS
B. Paromomycin
C. Diloxanide furoate
D. Dihydroemetine

704. Which of the following is used in Severe babesiosis

A. Clindamycin and Quinine
B. Azithromycin and Atovaquone
C. Tetracycline
D. Cotrimoxazole

705. Drug of choice for the Chagas disease is

A. Metronidazole
B. Suramin
C. Melarsoprol
D. Benznidazole

706. Drug affecting calcium channels of flukes is

A. Albendazole B. Praziquantel
C. Ivermectin D. Piperazine

707. Antihelminthic Drug contraindicated in seizure disorder is

A. DEC
B. Piperazine
C. Albendazole
D. Pyrantel Pamoate

708. Following Anti-retroviral drugs are triple phosphyraled for its activation except

A. Stavudine
B. Lamivudine
C. Tenofovir
D. Zidovudine

709. Phosphorylated Antiretroviral drugs with low affinity for DNA polymerase-y are all except

A. Emtricitabine
B. Zidovudine
C. Lamivudine
D. Tenofovir

710. Which of the following is an integrase inhibitor

A. Tipranavir
B. Darunavir
C. Atazanavir
D. Dolutegravir

711. The following Antiretroviral drug is a cytidine analogue

A. Zidovudine
B. Lamivudine
C. Stavudine
D. Didanosine

712. Which of the following antibacterial drug is not used in the treatment of malaria

A. Tetracycline
B. Doxycycline
C. Clindamycin
D. Clarithromycin

713. Which is the following antimalarial drug act by inhibiting bifunctional plasmodial dihydrofolate reductase-thymidylate synthetase

A. Primaquine
B. Proguanil
C. Pyronaridine
D. Piperaquine

701 d	702. b	703. d	704. a	705. d	706. b	707. b	708. c	709. b
710. d	711. b	712. d	713. b					

714. A drug which acts by preventing by polymerization of heme to hemozoin in malarial parasite is

A. Primaquine
B. Artesunate
C. Lumefantrine
D. Chloroquine

715. Which of the following is incorrect about primaquine

A. It is poor erythrocytic schizontocide
B. More active against the pre-erythrocytic stage of P. falciparum than that of P. vivax
C. Not effective on gametocytes
D. Effective on primary as well as secondary hepatic phases of the malarial parasite

716. A patient is diagnosed with chloroquine-resistant falciparum malaria. His treating physician advice nurse to administer quinine by IV infusion. The preferred IV fluid for quinine infusion is

A. Normal saline
B. 5% dextrose
C. Ringer lactate
D. ½ Normal saline

717. A patient was on treatment for multibacillary leprosy from last 3 months. Now the patient developed easy fatiguability, decreased interest in work and pallor n examination. What drug is responsible for the patient's symptom

A. Rifampicin B. Clofazimine
C. Minocycline D. Dapsone

718. About pretomanid. True is

A. Inhibits M. tuberculosis mycolic acid synthesis
B. Inhibits M. tuberculosis protein synthesis
C. Generates reactive nitrogen species
D. All of the above

719. Which is the following inhibits mycobacterial ATP SYNTHESIS

A. Isoniazid B. Rifampicin
C. Ethambutol D. Bedaquilline

720. Which of the following inhibits mycobacterial cell membrane synthesis and *trans*-translation

A. Isoniazid B. Pyrazinamide
C. Bedaquilline D. Ethambutol

721. Uveitis and arthralgias are seen in a patient taking rifabutin doses 450 mg daily in combination with the following antifungal agent

A. Fluconazole
B. Itraconazole
C. Posaconazole
D. Ketoconazole

722. Safest 1st line ATT in renal failure is

A. Rifampicin
B. Streptomycin
C. Isoniazid
D. Ethambutol

723. "Shoulder-hand" syndrome is caused by the following drug

A. Ethambutol B. Streptomycin
C. Bacitracin D. Isoniazid

724. Isoniazid overdose has been associated with the clinical trial of below except

A. Seizures refractory to treatment with phenytoin and barbiturates
B. Hepatotoxicity
C. Metabolic acidosis with an anion gap that is resistant to treatment with sodium bicarbonate
D. Coma

725. "Grey baby syndrome" following statements are true except

A. Neonates, especially if premature are at greater risk
B. Mechanisms are due to inadequate/ Deficiency of glucuronyl transferase
C. If baby recovers there will be no long-term sequelae
D. Begins within 24 hrs after treatment with chloramphenicol

726. Onycholysis and pigmentation of the nails is seen with following antimicrobial drug

A. Amoxicillin B. Neomycin
C. Mupirocin D. Tetracycline

714 d	715. c	716. b	717. d	718. d	719. d	720. b	721. a	722. a
723. d	724. b	725. d	726. d					

727. The wrong statement about Tigecycline is

A. Belongs to glycylcycline Group
B. Acts by inhibiting protein translation in bacteria by binding to the30S ribosomal subunit
C. Active against MRSA, VRE, Multi-drug resistant streptococci
D. Dose adjustment needed in renal failure

728. Minocycline sustained release microspheres for sub gingival; administration is done for

A. Oral ulcers due to anaerobic infections
B. Treatment of Ludwig's angina
C. To reduce pocket depth in patients with adult periodontitis in dentistry
D. None of the above

729. Following drugs has the highest oral bioavailability

A. Doxycycline
B. Tetracycline
C. Demeclocycline
D. Minocycline

730. Following drugs inhibit bacterial protein synthesis except

A. Clindamycin
B. Daptomycin
C. Spectinomycin
D. Clarithromycin

731. Patients should be cautioned not to consume alcohol when given prescription for any of the following EXCEPT

A. Chlorpropamide
B. Cefoperazone
C. Cefixime
D. Metronidazole

732. This drug depolarizes cell membranes of aerobic gram positive bacteria. It is effective against vancomycin resistant enterococcal infections. It may cause myopathy especially in patients taking statins. It is

A. Teicoplanin
B. Linezolid
C. Streptogramin
D. Daptomycin

733. A patient needs anti-biotic treatment for artificial valve, culture-positive infective enterococcal endocarditis. His medical history includes severe anaphylactic reaction to penicillin G during the past year. The best approach would be treatment with

A. Vancomycin
B. Aztreonam
C. Cefazolin plus gentamicin
D. Amoxicillin-clavulanic acid

734. Drugs that can be used to treat infections caused by Bacteroides fragilis are all EXCEPT

A. Metronidazole
B. Amikacin
C. Vancomycin
D. Trovafloxacin

735. A 14-year-old boy present with headache, fever and cough for 2 days. Sputum is scant and non-purulent and gram statins reveals many white cells but no organisms. The treatment should be initiated with

A. Cefazolin
B. Amikacin
C. Erythromycin
D. Trovafloxacin

736. The drug that should be used for prophylaxis of close contacts of a patient suffering from meningococcal meningitis is

A. Erythromycin
B. Dapsone
C. Rifampicin
D. Amikacin

737. For a 23 old pregnant female having severe sensitivity to amoxicillin, drug used to treat gonorrhea in a single dose should be

A. Ceftriaxone
B. Spectinomycin
C. Ciprofloxacin
D. Tetracycline

727 d	728. c	729. d	730. b	731. c	732. d	733. a	734. b	735. c
736. c	737. d							

738. Antimicrobials effective against anaerobic bacteria include the following EXCEPT

A. Metronidazole
B. Clindamycin
C. Chloramphenicol
D. Tobramycin

739. Which of the following drugs i6 LEAST likely to require dosage reduction in renal dysfunction?

A. Amikacin
B. Ciprofloxacin
C. Vancomycin
D. Clindamycin

740. Which of the following drugs is most likely to cause loss of equilibrium and auditory damage?

A. Isoniazid
B. Ethambutol
C. Amikacin
D. Rifabutin

741. The combination of trimethoprim and sulfamethoxazole is effective against which of the following opportunistic infections in the AIDS patient?

A. Disseminated Herpes simplex
B. Pneumocystis jiroveci
C. Cryptococcal meningitis
D. Tuberculosis

742. A contraindication to the use of ciprofloxacin is a history of

A. Gout
B. Deep vein thrombosis
C. Epilepsy
D. G-6 PD deficiency

743. Methanamine salts are used as urinary antiseptics. The reason they lack systemic antibacterial action is that they are

A. Converted to formaldehyde at low urinary pH
B. Rapidly metabolized by liver drug metabolizing enzymes
C. Not absorbed into systemic circulation after oral use
D. Substrates for active tubular secretion

744. Maximum incidence of photo toxicity is associated with

A. Norfloxacin
B. Cotrimoxazole
C. Lomefloxacin
D. Sparfloxacin

745. Which fluoroquinolones is highly active against Mycobacterium leprase and is being used in alternative multidrug therapy regimens

A. Norfloxacin
B. Ciprofloxacin
C. Ofloxacin
D. Lomefloxacin

746. Which of the following adverse effects is most likely to occur with sulfonamides?

A. Neurologic effects including headache, dizziness, and lethargy
B. Skin reactions
C. Fanconi's anemia
D. Hematuria

747. Which of the following statements about the fluoroquinolones is FALSE?

A. A fluoroquinolone is the drug of choice for treatment of an uncomplicated urinary tract infection in a 7-year-old girl
B. Modification of fluoroquinolones dosage is required in patients if creatinine clearance is less than 50 mL/min
C. Gonococcal resistance to fluoroquinolones may involve changes in DNA gyrase
D. Fluoroquinolones inhibit relaxation of positively supercoiled DNA

748. Which of the following statements about sulfonamides is FALSE?

A. Sulfonamide crystal Luria is most likely to occur at low urinary pH
B. Dysfunction of the basal ganglia may occur in the newborn sulfonamides are administered late in pregnancy
C. Sulfonamides inhibit bacterial dihydrofolate reductase
D. Sulfonamides are antimetabolites

738 d	739. d	740. c	741. b	742. c	743. a	744. d	745. c	746. b
747. a	748. c							

749. This inhibitor of bacterial protein synthesis has a narrow spectrum of antibacterial activity. It has been used in the management of abdominal abscess caused by Bacteroides fragilis, but antibiotic associated colitis has occurred. Which of the following drugs i8 being described?

A. Clarithromycin
B. Ticarcillin
C. Minocycline
D. Clindamycin

750. Which of the following drugs is most effective against an organism producing aminoglycoside inactivating enzymes?

A. Gentamicin
B. Streptomycin
C. Amikacin
D. Tobramycin

751. Bactericidal inhibitors of protein synthesis are

A. Tetracyclines
B. Lincosamides
C. Macrolides
D. Aminoglycosides

752. The following tetracycline has the potential to cause vestibular toxicity

A. Doxycycline
B. Demeclocycline
C. Minocycline
D. Tetracycline

753. Regarding the antibacterial action of gentamicin, which of the following statements is most accurate?

A. Efficacy is directly proportionate to the time that the plasma level of the drug is greater than the minimal inhibitory concentration
B. The antibacterial action of gentamicin is time dependent
C. Antibacterial activity is often reduced by the presence of an inhibitor of cell wall synthesis
D. Gentamicin continues to exert antibacterial effects even after plasma levels decrease below detectable range

754. Which of the following statements about the clinical uses of the aminoglycosides is FALSE?

A. The spectrum of antimicrobial activity of aminoglycosides includes Bacteroides fragilis
B. Aminoglycosides are often used in combination with cephalosporin in the empirical treatment of life-threatening bacterial infections
C. Owing to their polar nature, aminoglycosides are not absorbed following oral administration
D. Gentamicin is used with ampicillin for synergistic effects in the treatment of enterococcal endocarditis

755. Concerning streptogramins, which one of the following statements is FALSE?

A. They are active against methicillin-resistant staphylococci
B. They may cause a syndrome of arthralgia and myalgia
C. They are used in the management of infections caused by vancomycin-resistant enterococci
D. They induce formation of hepatic drug metabolizing enzymes

756. Which one of the following statements about doxycycline is FALSE?

A. It is more active than tetracycline against H. pylori
B. It is excreted mainly in the feces
C. It is bacteriostatic
D. It is used in Lyme's disease

749 d	750. c	751. d	752. c	753. d	754. a	755. d	756. a

757. **A 36 years old woman recently treated for leukemia is admitted to the hospital with malaise, chills and high fever. Gram stain of blood reveals the presence of gram negative bacilli. The initial diagnosis is bacteremia and parenteral antibiotics are indicated. The record of the patient reveals that she had severe urticarial rash, hypotension and respiratory difficulty after oral penicillin V about 6 months ago. The most appropriate drug should be**

A. Ampicillin plus sulbactum
B. Imipenem plus cilastatin
C. Cefazolin
D. Aztreonam

758. **This drug has activity against many strains of P. aeruginosa. However, treatment. Tire drug should not be used in penicillin-allergic patients. Its activity against gram-negative rods is enhanced if it is given in combination with tazobactum. Which of the following drugs is being described?**

A. Piperacillin B. Aztreonam
C. Amoxicillin D. Vancomycin

759. **TRUE statement regarding vancomycin is**

A. It is not susceptible to Penicillinases
B. It has the advantage of high oral bioavailability
C. It is bacteriostatic
D. Staphylococcal enterocolits occurs commonly with its use

760. **The following is true of vancomycin EXCEPT**

A. It can cause deafness as a dose related toxicity
B. It acts by inhibiting bacterial protein synthesis
C. It is an alternative to penicillin for enterococcal endocarditis
D. It is a bactericidal antibiotic active primarily against gram positive bacteria

761. **Amoxicillin + clavulanic acid is active against the following organisms EXCEPT**

A. Penicillinase producing N. gonorrhea
B. Penicillinase producing staph. aureus
C. Methicillin resistant Staph. aureus
D. P-lactamase producing E. coli

762. **Methicillin resistant staphylococci do not respond to β-lactam antibiotics because**

A. They have acquired penicillin binding protein which has low affinity for β-lactam antibiotics
B. They elaborate an amidase which destroys methicillin and related
C. They produce a β-lactamase which destroys methicillin and related
D. They are less permeable to β-lactam antibiotics

763. **Which of the following statements about imipenem is most accurate?**

A. The drug has a narrow spectrum of antibacterial action
B. It is used in fixed dose combination with sulbactum
C. Imipenem is active against methicillin-resistant staphylococci
D. In renal dysfunction, dosage reductions are necessary to avoid

764. **Which of the following statement about the bio disposition of penicillins and cephalosporins is NOT accurate**

A. Oral bioavailability is affected by lability to gastric acid
B. Renal tubular reabsorption of beta-lactams is inhibited by probenecid
C. Procaine penicillin G is used via intramuscular injection
D. Nafcillin and ceftriaxone are eliminated mainly via biliary secretion

765. **Which of the following drugs is NOT excreted in bile**

A. Erythromycin B. Gentamicin
C. Rifampicin D. Ampicillin

757 d	758. a	759. a	760. b	761. c	762. a	763. d	764. b	765. b

766. Which of the following is not an established antimicrobial drug synergism at clinical level?

A. Amphotericin B and flucytosine in cryptococcal meningitis
B. Carbenicillin and gentamicin in pseudomonal infections
C. Trimethoprim and sulfamethoxazole in coliform infections
D. Penicillin and tetracycline in bacterial meningitis

767. The persistent suppression of bacterial growth that may occur after limited exposure to some antimicrobial drug is called

A. Post antibiotic effect
B. Time dependent killing
C. Concentration dependent killing
D. Sequential blockade

768. All of the following antibiotics act by interfering with cell wall formation EXCEPT

A. Ceftriaxone
B. Clindamycin
C. Cycloserine
D. Vancomycin

769. A 38-year-old woman with recurrent hematuria is scheduled for cystoscopy. She is otherwise healthy, has never had surgery, takes no medications, does not smoke cigarettes, does not drink alcohol, and does not use IV drugs. Review of systems is negative. Physical exam is normal, except for a sharp, short sound heard in mid-systole followed by a grade II/VI murmur audible at the apex. What antibiotic prophylaxis for infective endocarditis should be given to this patient?

A. One dose of oral amoxicillin prior to the procedure
B. Intravenous ceftriaxone
C. Intravenous ampicillin plus gentamicin preoperatively
D. None

770. A 70-year-old male, status post AVR replacement 2 years ago for aortic stenosis, presents with widespread ecchymosis on his back and legs and some bruising on the back of both hands. His last INR was 3 weeks ago and was 3. He states he saw a doctor 6 days ago for a cough and was put on a medication described as a "white tablet. "His chronic medications include: warfarin 5 mg qd, albuterol inhaler 2 puffs 4 times a day, and nortriptyline 25 mg q has. Which of the following medications was he placed on?

A. Cefixime
B. Trimethoprim/sulfamethoxazole
C. Amoxicillin
D. Codeine

766 d	767. a	768. b	769. d	770. b

701. D. Paromomycin

Paromomycin is an alternative drug for giardiasis, especially during the 1st trimester of pregnancy when metronidazole and other drugs are contraindicated.

Thus, D is correct. Ref: KDT, Topic: antihelminthics

702. B. Histoplasmosis

Uses of metronidazole

- Amoebiasis
- Trichomoniasis
- Giardiasis
- Bacterial vaginosis
- Pseudomembranous colitis
- H. Pylori
- Anaerobes: Bacteroides fragile and Clostridium dificile
- Acute necrotizing ulcerative gingivitis
- Guinea worm infestation

Thus, B is correct. Ref: KDT, Topic: antiamoebics

703. D. Dihydroemetine

- Both intestinal (luminal) and extra-intestinal herbicides: Nitroimidazoles (metronidazole, tinidazole secnidazole, ornidazole), emetine and **dehydroemetine.**
- Luminal amoebicides only: Diloxanide furoate, paromomycin, iodoquinol, quiniodochlor and tetracyclines
- Tissues (extra-intestinal amoebicides only: Chloroquine

Thus, D is correct. Ref: KDT, Topic: antiamoebics

704. A. Clindamycin and Quinine

Clindamycin and Quinine:

- Used in Severe babesiosis

Azithromycin and Atovaquone

- Used in Mild-moderate babesiosis

Thus, A is correct. Ref: GG, Miscellaneaous infections

705. D. Benznidazole

Drug of choice for Chagas disease in Benznidazole Alternative treatment for Chagas is Nifurtimox.

Thus, D is correct. Ref: GG, Miscellaneaous infections

706. B. Praziquantel

Mechanism of action of Praziquantel:

- Selectively of action of praziquantel on tapeworms and flukes may be dependent on the presence of a specific variant of Ca2+ channel sensitive to Praziquantel in these worms
- The tapeworms lose grip of the intestinal mucosa and are expelled
- Flukes and schistosomes are also dislodged in tissues and veins.
- Praziquantel is active against adult as well as juvenile and larval stages of tapeworms

Thus, B is correct. Ref: KDT, Topic: antihelminthics

707. B. Piperazine

Piperazine

- Excitement saw at higher doses and convulsions at toxic doses
- Safe in pregnancy
- Contraindicated in
- Renal insufficiency
- Epilepsy

Thus, B is correct. Ref: KDT, Topic: antihelminthics

708. C. Tenofovir

NRTIs are nucleosides that must be triphosphorylated at the 5-hydroxyl to exert activity. The sole exception, tenofovir, is a nucleotide monophosphate analogue that requires two additional phosphates to acquire full activity.

Thus, C is correct. Ref: GG, Topic : anti HIV / antiviral drugs

709. B. Zidovudine

- Phosphorylated emtricitabine, lamivudine, and tenofovir have low affinity for DNA polymerase-y and are largely devoid of mitochondrial toxicity
- Among NRTIs: the intercellular triphosphates for all NRTIs drugs have low affinity for human DNA polymerase-a and-b, some are capable of inhibiting human DNA polymerase-y
- DNA polymerase-y is a mitochondrial enzyme
- As a result, the important toxicities common to this class of drugs result in part from the inhabitation of mitochondrial DNA synthesis
- These toxicities include anaemia, granulocytopenia, myopathy, peripheral neuropathy and pancreatitis

Thus, B is correct. Ref: GG, Topic : anti HIV / antiviral drugs

710. D. Dolutegravir

Integrase inhibitors:

- Raltegravir--- RAL
- Elvitegravir---EVG
- Dolutegravir---DTG

Protease inhibitors:

- Tipranavir
- Darunavir
- Atazanavir

Thus, D is correct. Ref: GG, Topic : anti HIV / antiviral drugs

711. B. Lamivudine

Cytidine analogue:

- Lamivudine AND emtricitabine
- Emtricitabine is a cytidine analogue chemically related to lamivudine and shares many of that drug's pharmacodynamic properties

Thymidine analogue:

- Zidovudine and stavudine
- So not to be combined as the compete for thymidine kinase for activation leading to pharmacological antagonism

Adenosine analogue:

- Tenofovir: the ONLY nucleotide approved for HIV treatment
- Didanosine

Guanosine analogue:

- Abacavir: The only approved antiretroviral that is active as a guanosine analogue

Thus, B is correct. Ref: GG, Topic : anti HIV / antiviral drugs

712. D. Clarithromycin

The antibacterial drug s used in the treatment of malaria

- Tetracycline
- Doxycycline
- Clindamycin
- Sulfonamides: sulfadoxine, Sulfamethipyrazine
- Sulfone: Dapsone

Thus, D is correct. Ref: KDT, Topic: antimalarials

713. B. Proguanil

Proguanil:

- The drug acts by inhibiting bifunctional plasmodial dihydrofolate reductase-thymidylate synthetase that is crucial for parasite de novo purine and pyrimidine synthesis.
- A fixed combination of atovaquone with proguanil hydrochloride is available in the U.S. for **malaria chemoprophylaxis**

Thus, B is correct. Ref: GG, Topic: antimalarials

714. D. Chloroquine

Chloroquine:

MOA:

- Act by preventing polymerization of heme to hemozoin in the malarial parasite
- Resulting in accumulation of heme WHICH is toxic for the parasite

Thus, D is correct. Ref: KDT, Topic: antimalarials

715. C. Not effective on gametocytes

Primaquine:

- Has poor erythrocytic schizontocide

- Has weak action on P. vivax
- Blood forms of P. falciparum are totally insensitive
- It is more active against the preerhthrocytic stage of P. falciparum than that of P. vivax
- Has marked effect on primary as well as secondary hepatic phases of the malarial parasite
- It is highly active against gametocytes and hypnozoites
- That's why used for the redical cure of relapsing (vivax) malaria

Thus, C is correct. Ref: KDT, Topic: antimalarials

716. B. 5% dextrose

A patient was diagnosed with chloroquine-resistant falciparum malaria. His treating physician advice nurse to administer quinine by IV infusion. The nurse will give quinine infusion through **5% dextrose. Hypoglycaemia due to hyperinsulinemia is the most important side effect which can be prevented by infusing quinine in 5% dextrose**.

Adverse effects of quinine infusion

- **Hypoglycemia** is also common, mostly in the treatment of severe malaria, and can be life-threatening if not treated promptly with intravenous glucose.
- **Hypotension** is rarer but also serious and most often is associated with excessively rapid intravenous infusions of quinine or Quinidine
- Quinine diluted preferably in 5% (w/v) glucose solution to counteract hypoglycemia
- In the absence of glucose, physiological saline may be used
- This method of administration minimizes the danger of severe hypotension and subsequent respiratory collapse.
- Don't give quinine as a bolus

OTHER ADVERSE EFFECTS:

'Cinchonism' syndrome

- Large-scale dose or higher therapeutic doses are taken for a few days
- Consists of ringing in ears, nausea, vomiting (due to both gastric irritation and CTZ stimulation), headache, mental confusion, vertigo, difficulty in hearing
- Visual defects (due to direct neurotoxicity as well as constriction of retinal and auditory vessels).

Diarrhoea, flashing and marked perspiration

- Completely STOPS since the drug is stopped
- Seldom cause hemolysis and idiosyncratic reactions

Thus, B is correct. Ref: KDT, Topic: antimalarials

717. D. Dapsone

Dapsone:

- Causes anaemia and can increase/ decompensate pre-existing anaemia
- If haemoglobin is less than 10 gm %, start iron, folic acid, ascorbic acid and advise the person to take high protein diet along with MDT

Thus, D is correct.

718. D. All of the above

Pretomanid:

Bicyclic nitroimidazopyrans

- Pretomanid has two mechanisms of action
- Under aerobic conditions, it inhibits M. tuberculosis mycolic acid and protein synthesis
- Is a prodrug that requires activation by the bacteria and generates reactive nitrogen species

USE:

- Treatment of extensively drug-resistant and multidrug-resistant TB

Thus, D is correct. Ref: GG, Topic: Antitubercular drugs

719. D. Bedaquilline

Bedaquilline

- Mycobacterial ATP SYNTHESIS

Isoniazid and Ethionamide:

- Inhibit mycolic acid synthesis

Rifampicin

- Inhibits RNA synthesis by targeting RNA polymerase

Ethambutol

- Inhibits cell wall synthesis

Thus, D is correct. Ref: GG, Topic : Antitubercular drugs

720. B. Pyrazinamide

Bedaquilline

- Mycobacterial ATP SYNTHESIS

Isoniazid and Ethionamide:

- Inhibit mycolic acid synthesis

Ethambutol

- Inhibits cell wall synthesis

Pyrazinamide

- Inhibits cell membrane synthesis and trans-translation

Thus, B is correct. Ref: GG, Topic : Antitubercular drugs

721. A. Fluconazole

- Uveitis and arthralgias are seen in a patient taking rifabutin doses 450 mg daily in combination with fluconazole
- Advise patient to discontinue the drug if visual symptoms (pain or blurred vision) occur
- Rifabutin causes an orange-tan discolouration of skin, urine, faeces, saliva, tears and contact lenses, like
- Really, thrombocytopenia, a flu-like syndrome, hemolysis, myositis, chest pain, and hepatitis develop in patients treated with rifabutin
- Unique side effects include polymyalgia, pseudojaundice and anterior uveitis
- Uveitis and arthra; as are seen in patients taking rifabutin doses > 450 mg daily in combination with clarithromycin also.

Thus, A is correct. Ref: GG, The Pharmacological Basis of Therapeutics, Topic: Antitubercular drugs

722. A. Rifampicin

Safest first line ATT in renal failure is rifampicin because it is majorly eliminated by OATP1 channel in the bile. Thus, A is correct. Ref: GG, The Pharmacological Basis of Therapeutics, Topic: Antitubercular drugs Topic: Antitubercular drugs

723. D. Isoniazid

Shoulder-hand syndrome is caused by Isoniazid. It's a type of neuropathy due to pyridoxine deficiency. Other adverse effects of ISONIAZID include hepatotoxicity, peripheral neuropathy, psychosis, amnesia, risk of lupus like syndrome, Thus, D is correct. Ref: GG, The Pharmacological Basis of Therapeutics, Topic: Antitubercular drugs Topic: Antitubercular drugs

724. B. Hepatotoxicity

- Isoniazid overdose has been associated with the clinical Trial of
- Seizures refractory to treatment with phenytoin and barbiturates
- Metabolic acidosis with an anion gap that is resistant to treatment with sodium bicarbonate
- Coma

Hepatoxicity is caused by Isoniazid but it's not in the trial evidence. It was noticed in post marketing surveillance not in CONTROLLED CLINICAL TRIAL.

Thus, B is correct. Ref: GG, Topic: Antitubercular drugs

725. D. Begins within 24 hrs after treatment with chloramphenicol

"Grey baby syndrome"

- Neonates, especially if premature
- Begin 2-9 days after treatment

Within the first 24 hours:

- Vomiting, refusal to suck
- Irregular rapid respiration, abdominal distention
- Periods of cyanosis, and passage of loose, green stools
- Next 24 hours: Ashen-grey colour, flaccid hypothermic
- If recovered: - no sequelae

Mechanisms:

- Deficiency of glucuronyl transferase (a hepatic enzyme that metabolizes chloramphenicol in first 3-4 weeks of life)
- Inadequate renal extraction of unconjugated drug.

Toxic effects have not been observed in the newborns when as much as 1g of the antibiotic has been given every 2 hours to the mother during labour.

Thus, D is correct. Ref: GG, Topic : Chloramphenicol

726. D. Tetracycline

Onycholysis and pigmentation of the nails may develop with or without accompanying

Photosensitivity with the use of tetracyclines.

Thus, D is correct. Ref: GG, Topic : Tetracyclines

727. D. Dose adjustment needed in renal failure

Tigecycline:

- Belongs to glycylcycline Group
- Is active against most bacteria that have developed resistance to the classical tetracyclines
- Acts by inhibiting protein translation in bacteria by binding to 30S ribosomal subunit
- It blocking entry of amino-acyl tRNA molecules streptococci
- Excreted in bile no dose adjustment in renal failure

Tigecycline lacks cross-resistance with tetracycline due to

- Low affinity for efflux pumps
- In bacteria, ribosomal protection protein against tetracycline is less active in protecting the ribosomal binding site from Tigecycline.

Thus, is correct. Ref: KDT, Topic: Newer drugs

728. C. To reduce pocket depth in patients with adult periodontitis in dentistry

- Minocycline sustained release microsphere for sub gingival administration is used in dentistry **as an adjunct to scaling and root planning procedures to reduce pocket depth in patients with adult periodontitis.**

Thus, C is correct. Ref: GG

729. D. Minocycline

- Oral absorption of most Tetracyclines is incomplete
- The percentage of an oral dose that is absorbed with an empty stomach is
- Modest for Demeclocycline and tetracycline (60-80%)
- High for doxycycline (95%) and minocycline (100%)

Tigecycline

- Is not appreciably absorbed from the gastrointestinal tract
- Only available for parenteral administration

Thus, D is correct. Ref: GG, Topic : Tetracyclines

730. B. Daptomycin

Bacteriostatic, protein-synthesis inhibitors are

- Tetracyclines
- Glycycines
- Chloramphenicol
- Macrolides
- Ketolides
- Lincosamides (Clindamycin)
- Streptogramins
- (Quinupristin/Dalfopristin)
- Oxazolidinones (linezolid)
- Aminocyclitols (Spectinomycin)

Lipopeptides (Daptomycin) is bactericidal

- Acts by causing depolarization of bacterial cell membranes with K+ efflux a rapid cell death.

Thus, B is correct. Ref: GG, Topic : MRSA drugs

731. C. Cefixime

Drugs showing disulfiram like reaction with alcohol are

- Cefamandole, Cefoperazone, Cefotetan
- Moxalactam
- Chlorpropamide
- Metronidazole
- Griseofulvin
- Procarbazine

Thus, C is correct. Ref: KDT, Topic: Beta lactams

732. D. Daptomycin

Daptomycin is a newer antibiotic that acts by causing depolarization of bacterial cell membranes. It is effective in MRSA, VRSA and even Streptogramin resistant SA infections as well as VRE infections. It can cause myopathy in patients taking statins.

Thus, D is correct. Ref: KDT, Topic: MRSA drugs

733. A. Vancomycin

- Severe allergy to penicillin rule out the use of amoxicillin and cefazolin.
- Vancomycin is highly effective against MRSA and enterococcal infections.
- Drugs for VRSA and VRE (Vancomycin Resistant Enterococcus faecalis) include linezolid and Daptomycin.

Thus, A is correct. Ref: KDT, Topic: glycopeptides

734. B. Amikacin

Drugs used to treat anaerobic organisms include:

- Metronidazole
- Moxifloxacin and Trovafloxacin
- Vancomycin
- Clindamycin
- Chloramphenicol
- Aminoglycosides are ineffective against anaerobic organisms

Thus, B is correct. Ref: KDT, Topic: aminoglycosides

735. C. Erythromycin

Diagnosis is atypical pneumonia and DOC is erythromycin.

Thus, C is correct. Ref: KDT, Topic: macrolides

736. C. Rifampicin

Rifampicin and ciprofloxacin are used for the prophylaxis of meningococcal meningitis. DOC for mass prophylaxis of meningococcal meningitis is CEFTRIAXONE. In order or preference ceftriaxone>ciprofloxacin >rifampicin.

Thus, C is correct. Ref: KDT, Topic: Antitubercular drugs

737. B. Spectinomycin

- Ceftriaxone is contraindicated in patients having severe allergy to penicillin.
- Tetracyclines are not effective against gonorrhea.
- Although ciprofloxacin is effective as a single dose treatment of gonorrhea but it is contraindicated in pregnancy.
- Spectinomycin can be given as single dose treatment of PPNG.

Thus, B is correct. Ref: KAT, Topic Aminoglycosides

738. D. Tobramycin

Aminoglycosides require oxygen for transport in the bacterial cell. These are therefore ineffective against anaerobic organisms.

Thus, D is correct. Ref: KDT, Topic: Aminoglycosides

739. D. Clindamycin

- Clindamycin is excreted by biliary route and therefore can be used safely in renal dysfunction.

Other drugs excreted in bile are:

- Ampicillin
- Nafcillin
- Chloramphenicol
- Novobiocin
- Rifampicin
- Doxycycline

Thus, D is correct. Ref: KDT, Topic: Aminoglycosides

740. C. Amikacin

Aminoglycosides can cause nephrotoxicity, ototoxicity and neuromuscular block.

Thus, C is correct. Ref: KDT, Topic: Aminoglycosides

741. B. Pneumocystis jiroveci

Cotrimoxazole is effective against Pneumocystis and toxoplasmosis.

Thus, B is correct. Ref: KDT, Topic: Sulfonamides

742. C. Epilepsy

- Ciprofloxacin is contraindicated with NSAIDs because this combination results in increased risk of seizures.

- It is also contra-indicated with theophylline because it increases the risk of theophylline toxicity by inhibiting its metabolism.
- It is contra-indicated in pregnancy because it increases the risk of cartilage damage in newborn.

Thus, C is correct. Ref: KDT, Topic: Fluoroquinolones

743. A. Converted to formaldehyde at low urinary pH

Methanamine mandelate is used as a urinary antiseptic. It acts by conversion to formaldehyde at acidic urinary pH. Mandelic acid formed from this salt also serves the function of urinary acidifying agent. These are not effective against proteus because proteus results in the formation of ammonia which alkalinizes the urine.

Thus, A is correct. Ref: KDT, Topic: UTI treatment drugs Please see section on alkalinizers and acidifiers of urine

744. D. Sparfloxacin

- Maximum phototoxic fluoroquinolone is Sparfloxacin.
- Pefloxacin and Lomefloxacin are also phototoxic but less than Sparfloxacin.

Thus, D is correct. Ref: KDT, Topic: fluoroquinolones

745. C. Ofloxacin

Single lesion single dose treatment of leprosy utilizes ROM therapy.

R: Rifampicin

0: Ofloxacin

M: Minocycline Now days, even single lesion leprosy is treated as paucibacillary leprosy.

Thus, C is correct. Ref: KDT, Topic: fluoroquinolones

746. B. Skin reactions

Rash is the most common adverse effect seen with the use of sulfonamides.

Thus, B is correct. Ref: KDT, Topic: sulfonamides

747. A. A fluoroquinolone is the drug of choice for treatment of an uncomplicated urinary tract infection in a 7-year-old girl

- Fluoroquinolones are contra-indicated in children (due to risk of cartilage damage) and pregnant female.
- Most common mode of resistance to fluoroquinolones is mutation in DNA gyrase.
- Dose of fluoroquinolones should be adjusted in renal failure (except moxifloxacin and trovafloxacin).
- These drugs act by inhibiting DN gyrase.

Thus, A is correct. Ref: KDT, Topic: fluoroquinolones

748. C. Sulfonamides inhibit bacterial dihydrofolate reductase

- Sulfonamides are antimetabolites that act by inhibiting the enzyme folate synthase. Dihydrofolate reductase is inhibited by methotrexate, trimethoprim and pyrimethamine.
- These can cause kernicterus in new born if used in late pregnancy.
- At acidic pH, these can get precipitated and result in crystalluria.

Thus, C is correct. Ref: KDT, Topic: sulfonamides

749. D. Clindamycin

Important points about clindamycin are:

- It acts by inhibiting protein synthesis (via. inhibition of translocation).
- It is effective against anaerobic organisms.
- Pseudomembranous colitis and hepatotoxicity are important adverse effects.
- It is secreted in bile, therefore can be used safely in patients with renal dysfunction.

Thus, D is correct. Ref: KDT, Topic: anti-anaerobe drugs

750. C. Amikacin

- Amikacin is most resistant to aminoglycoside inactivating enzymes.

- Aminoglycosides are not effective against anaerobes.

Thus, C is correct. Ref: KDT, Topic: aminoglycoside

751. D. Aminoglycosides

Most protein synthesis inhibiting antibiotics are bacteriostatic but aminoglycosides are bactericidal.

Thus, D is correct. Ref: KDT, Topic: aminoglycoside

752. C. Minocycline

Tetracycline causing maximum vestibular toxicity : Minocycline

Most phototoxic tetracycline : Demeclocycline

Tetracycline causing diabetes insipidus: Demeclocycline

Tetracycline safe in renal failure : Doxycycline

Thus, C is correct. Ref: KDT, Topic: Tetracyclines

753. D. Gentamicin continues to exert antibacterial effects even after plasma levels decrease below detectable range

- Aminoglycosides show concentration dependent killing and prolonged post antibiotic effect.

Thus, D is correct. Ref: KAT, Topic Aminoglycosides

• Time dependent post antibiotic effect	• Concentration dependent post antibiotic effect	• Time dependent concentration enhanced post antibiotic effect
• Beta lactams • Vancomycin	• Aminoglycoside • Daptomycin • Fluroquinolone • Metronidazole • Azithromycin • Ketolides	• Clarithromycin • Clindamycin • Erythromycin • Linezolid • Streptogramins • Tetracyclines • Tigecycline

754. A. The spectrum of antimicrobial activity of aminoglycosides includes Bacteroides fragilis

Important points about aminoglycosides are:

- These are bactericidal inhibitors of protein synthesis.
- Due to formation of ionic molecules in GIT, these are ineffective orally.
- Combination of aminoglycosides with penicillins is synergistic and is used for pseudomonas and enterococcal infections.
- Aminoglycosides require O_2, for transport in the bacterial cell. These are therefore, not effective against anaerobic organisms like Bacteroides fragilis.

Thus, A is correct. Ref: KDT, Topic: Aminoglycosides

755. D. They induce formation of hepatic drug metabolizing enzymes

Streptogramins like quinpristin and dalfopristin possess microsomal enzyme inhibitory property (NOT inducing).

These are effective against MRSA and VRE infections.

Thus, D is correct. Ref: KAT, Topic : MRSA drugs

756. A. It is more active than tetracycline against H. pylori

- Doxycycline is a bacteriostatic agent that acts by inhibiting protein synthesis.
- It is safe in renal failure as it is excreted mainly in feces.
- Doxycycline is useful in Lyme's disease.
- Tetracycline (and not doxycycline) is useful in H. pylori therapy.

Thus, A is correct. Ref: KDT, Topic: Tetracyclines

757. D. Aztreonam

In patient with severe sensitivity to penicillin, all beta lactams except monobactams are contraindicated. Both aztreonam and imipenem are effective for gram-negative infections but because imipenem causes seizures as serious adverse effect, aztreonam is preferred in such a patient.

Thus, D is correct. Ref: KDT, Topic: beta lactams

758. A. Piperacillin

- Piperacillin can be combined with beta-lactamase inhibitor, tazobactum.
- Vancomycin is NOT effective against pseudomonas.
- All (3-lactams except Aztreonam are contra-indicated if severe allergic reaction develops to any P-lactam antibiotic.

Thus, A is correct. Ref: KDT, Topic: beta lactams

759. A. It is not susceptible to Penicillinases

- Vancomycin is a glycopeptide bactericidal antibiotic that is administered by parenteral route.
- It is Penicillinase resistant, thus can be used in MRSA infections.
- It is also used for the treatment of pseudomembranous colitis.
- Vancomycin is ineffective against pseudomonas.

Thus, A is correct. Ref: KDT, Topic: Glycopeptides

760. B. It acts by inhibiting bacterial protein synthesis

- Vancomycin is a glycopeptide that acts by inhibiting bacterial cell wall synthesis. It is a bactericidal drug (like other cell wall synthesis inhibitors.
- It is the drug of choice for MRSA and enterococci resistant to penicillins.
- Nephrotoxicity, ototoxicity and red man syndrome are prominent adverse effects of vancomycin.

Thus, B is correct. Ref: KDT, Topic: glycopeptides

761. C. Methicillin resistant Staph. aureus

Staphylococcus aureus develops resistance to methicillin by acquiring altered penicillin binding proteins that have low affinity. No B-lactam is effective against MRSA.

Clavulanic acid is an inhibitor of 13-lactamase. It can restore the sensitivity of penicillins against the organisms who have developed penicillin.

Thus, C is correct. Ref: KDT, Topic: beta lactams

762. A. They have acquired penicillin binding protein which has low affinity for β-lactam antibiotics

- Resistance to most penicillins is due to elaboration of beta-lactamase.
- Methicillin is most resistant penicillin to β-lactamase.
- Staphylococcus aureus develops resistance to methicillin's by acquisition of altered penicillin binding proteins.

Thus, A is correct. Ref: KDT, Topic: beta lactams

763. D. In renal dysfunction, dosage reductions are necessary to avoid

- Imipenem is a broad spectrum 13-lactam antibiotic.
- It is used in combination with cilastatin.
- No beta lactam antibiotic is effective against MRSA.
- In high concentration, imipenem-cilastatin combination can result in seizures.

Thus, D is correct. Ref: KDT, Topic: beta lactams

764. B. Renal tubular reabsorption of beta-lactams is inhibited by probenecid

- Probenecid inhibits renal tubular secretion of penicillins (not reabsorption)
- Beta lactams eliminated by biliary route are:
- Ampicillin
- Nafcillin
- Ceftriaxone
- Cefoperazone

- Penicillin G has to be given by i.m. route because it is broken down by gastric acid (decreases oral bioavailability).

Thus, B is correct. Ref: KDT, Topic: beta lactams

765. B. Gentamicin

Gentamicin is an aminoglycoside and is excreted via renal route.

Thus, B is correct. Ref: KDT, Topic: aminoglycosides

766. D. Penicillin and tetracycline in bacterial meningitis

Combination of a bacteriostatic and bactericidal drug in most cases is antagonistic. Bactericidal drugs act on fast multiplying organisms whereas bacteriostatic drugs inhibit the growth. Here, penicillins are bactericidal whereas Tetracyclines are bacteriostatic.

Thus, D is correct. Ref: KDT, Topic: aminoglycosides

767. A. Post antibiotic effect

- Time dependent killing kinetics is shown by aminoglycosides. Here, the killing activity depends upon the length of time, plasma concentration is above MIC.
- Concentration dependent killing is shown by B lactum drugs. Here, killing activity depends upon the ratio of plasma concentration of MIC.
- Post antibiotic effect is the suppression of bacterial growth after limited exposure to antibiotic.

Thus, A is correct. Ref: KAT, General antimicrobial considerations

768. B. Clindamycin

Clindamycin acts by inhibiting the protein synthesis. Ceftriaxone is beta lactam act by inhibiting the transpeptidases; Cycloserine a neuropsychiatric toxicity producing Antitubercular drug act by inhibiting Alanine ligase /racemase; Vancomycin act by inhibiting d-ala-d-ala bond / transglycosylase inhibition.

Thus, B is correct. Ref KDT, Topic: cell wall inhibitors / general antimicrobial considerations

769. D. None

- SBE prophylaxis for dental procedures:
- Prosthetic cardiac valve
- Previous history of endocarditis
- Congenital heart disease:
- Unrepaired cyanotic
- Completely repaired with prosthetic material or device for ≤ 6 months' post procedure
- Cardiac transplant recipients who develop cardiac valvulopathy

This woman likely has mitral valve prolapse with a murmur. Note that all of the valvar abnormalities have been taken out for needing antibiotic prophylaxis. For adults, the only reason you'll need to give antibiotic prophylaxis is for those with prosthetic valves or who have a history of endocarditis.

- Summary of major changes in updated guidelines:
- Limit SBE prophylaxis to only those conditions listed above.

Antibiotic prophylaxis is no longer recommended for any other form of congenital heart disease.

Antibiotic prophylaxis for procedures on respiratory tract or infected skin, etc. only for conditions listed above.

No antibiotic prophylaxis for GU or GI procedures (regardless of cardiac valve abnormality)!

Thus, D is correct. Ref KDT Topic: General considerations

770. B. Trimethoprim/sulfamethoxazole

The combination of warfarin and TMP/SMX can be a very deadly one. It is the most common warfarin interaction leading to hospitalization. Amoxicillin, codeine, and Cefixime do not interact with warfarin. Azithromycin only rarely causes an increase in INR in patients on warfarin.

Thus, B is correct. Ref KDT Topic: Sulfonamides